

MILITARY MEDICINE

Formerly:

THE

MILITARY
SURGEON

DOES NOT CIRCULATE

UNIVERSITY
OF MICHIGAN

JAN 11 1955

MEDICAL
LIBRARY



Washington, D.C.

VOL. 118

JANUARY 1955

NO. 1



...from incision to closure...



spinal
anesthesia
with
PONTOCAINE
HYDROCHLORIDE

BRAND OF
TETRACAINE HYDROCHLORIDE

● **PROLONGED**

1½ to 2 hours or more.

● **MARKED MUSCULAR RELAXATION**

● **WELL TOLERATED**

Little or no fall in blood pressure, low incidence of nausea or post-spinal headache.

Supplied as 1% solution (10mg. per cc.) in ampuls of 2 cc.; "Niphanoid" powder, ampuls of 10 mg., 15 mg. and 20 mg.

Also "HEAVY" PONTOCAINE:

Pontocaine 0.2% in dextrose 6%, ampuls of 2 cc.
Pontocaine 0.3% in dextrose 6%, ampuls of 5 cc.

Winthrop-Stearns INC.

NEW YORK 18, N. Y. WINDSOR, ONT.

In circulatory emergencies...

... during surgery combat
hypotension with

NEO-SYNEPHRINE® HYDROCHLORIDE
BRAND OF PHENYLEPHRINE HYDROCHLORIDE

1% Parenteral Solution... 1 cc. ampuls and 5 cc. vials.

Pontocaine and Neo-Synephrine, trademarks reg. U. S. Pat. Off.

Medical
Faxon

IN TENSION AND HYPERTENSION

sedation without hypnosis

R_x **Serpasil** T.M.

(reserpine CIBA)

A pure crystalline alkaloid of rauwolfia root
first identified, purified and introduced by CIBA

In anxiety, tension, nervousness and mild to severe neu-
roses—as well as in hypertension—SERPASIL provides
a nonsoporific tranquilizing effect and a sense of well-
being. Tablets, 0.25 mg. (scored) and 0.1 mg.

C I B A

SUMMIT, N. J.

9/5064N

Mention MILITARY MEDICINE—It Helps Your Association

if

MILITARY MEDICINE

Official Publication • Association Military Surgeons of the United States

President:

MAJOR GEN. JOSEPH I. MARTIN
MC, U. S. Army

Editor:

COL. ROBERT E. BITNER,
U. S. Army, Ret.

Published monthly and constituting two volumes annually.
Volumes commence with the January and July numbers.

Contents

Original Articles:	Page
Our New President	3
Presidential Address	5
<i>Leonard A. Scheele, Surgeon General, U.S.P.H.S.</i>	
The Role of the Army Medical Service in the Maintenance of National Health	10
<i>George E. Armstrong, Major General, M.C., U. S. Army</i>	
The Role of the Navy in the Maintenance of National Health	15
<i>H. L. Pugh, Rear Admiral, M.C., U. S. Navy</i>	
The Role of the Air Force in the Maintenance of National Health	18
<i>Dan C. Ogle, Major General, USAF (MC)</i>	
The Role of the Veterans Administration in the Maintenance of National Health ..	20
<i>J. T. Boone, Vice Adm. USN, Ret., Chief Medical Director, V.A.</i>	
The Clinical Syndrome of Acute Renal Insufficiency	25
<i>Christopher C. Shaw, Capt. M.C., U. S. Navy</i>	
Performance and Recovery Pulse Rate Studies in the Norwegian Army	32
<i>K. Lange Andersen, M.D.</i>	
Suggested Systems for the Uniform Illumination of Visual Acuity Test Charts	37
<i>Lawrence T. Odland, Capt. USAF (MC) and Louise I. Sloan, Ph.D.</i>	
Memorable Events, Lives, and Books. Calendar of Commemoration for 1955	43
<i>Claudius F. Mayer, M.D.</i>	
Editorial	58
<i>Around the World—Claudius F. Mayer, M.D.</i>	60
Sustaining Members	63
Association Notes	64
Obituaries	72
Book Reviews	73
Books Received	82
The Wellcome Medal and Prize	83
Index to Advertisers	3b

• Entered as second class matter at the post office at Washington, D.C., with additional entry at Menasha, Wisconsin.
• Acceptance for mailing at special rate of postage provided for in paragraph 4, section 538 P. L. & R., authorized April 14, 1926. • Publication Office: 450 Ahnapp Street, Menasha, Wisconsin. • Editorial and Executive Office: Suite 718, New Medical Building, 1726 Eye St. N.W., Washington 6, D.C. • Advertising Representative: 280 Madison Ave., New York 16, N.Y. • Subscription \$7.50 a year for the United States. Elsewhere throughout the world, \$8.50. Current copies, 75 cents. Copies more than ten years old \$1.00 each. Subscriptions payable in advance. Membership dues (including subscription to MILITARY MEDICINE) \$6.00. Checks should be made payable to The Association of Military Surgeons, U.S., and not to any officer personally. • The addresses of members and subscribers are not changed except upon request. In every case the old as well as the new address should be given. Requests for change of address must reach the Secretary before the fifteenth of the month to be effective for the following issue. • Requests for reprints should be made at the time of forwarding article. Authors alone are responsible for the opinions expressed in their contributions. Printed in U.S.A.



MAJOR GENERAL JOSEPH I. MARTIN, M.C., U. S. Army, President, Association of
Military Surgeons of the United States.

MILITARY MEDICINE

ORIGINAL ARTICLES

Authors alone are responsible for opinions expressed in their contributions

Our New President

MAJOR GENERAL JOSEPH I. MARTIN, Medical Corps, United States Army, was elected President of our Association at the business meeting of the 61st Annual Convention held in Washington, D.C., December 1, 1954. He previously had served six years as a Vice President of the Association.

General Martin, born in Chicago, Illinois, February 1, 1894, received all of his pre-military training in the schools of that city, culminating in the award of his M.D. degree in 1918 from the Chicago Hospital College of Medicine. Soon thereafter, he was appointed a First Lieutenant in the Army Medical Corps Reserve. The critical situation of our armed forces in Europe in the Summer of 1918 resulted in his call to and entry upon active duty. Since initially donning the Army uniform in 1918, he has served our country continuously. His span of over thirty-six years of active duty, including service in three wars, has brought him a variety and breadth of military experience which well qualifies him as one of our outstanding authorities in military medicine.

Space does not permit a detailed recording of the numerous duty assignments of General Martin which covered the period of development of our modern Army from its animal-drawn prototype of World War I. Interspersed with several tours of clinical practice at large and small Army hospitals, at home and overseas, he received several years of formal military schooling. He is a graduate of the Army Medical School, the Medical Field Service School, the Infantry

School, the Command and General Staff College, and the Army War College.

Late in 1940, when world tensions dictated that active preparations be made for our National security, General Martin, then a Lieutenant Colonel at Sixth Corps Area Headquarters in Chicago, Illinois, was given the task of designing, building, and instituting the training program at the Medical Department Replacement Training Center at Camp Grant, Illinois. He served at that huge training installation as its Executive Officer until early in 1943 when he was selected to be the Chief Surgeon of General Mark Clark's Fifth Army in North Africa. He served for more than two years with great distinction in that capacity during the North African and Italian campaigns, developing many medical practices that became, and have remained, standard procedures for our Army Medical Service. In July 1945, he left Italy for the Pacific theater to become the Chief Surgeon of the Western Pacific, with headquarters in the Philippine Islands. In January 1946, he was appointed Chief Surgeon of General MacArthur's Allied Forces Pacific Headquarters in Tokyo, remaining in that position until his return to the United States in August 1946.

Without doubt, he has been known to more personnel of the Army Medical Service than any other medical officer now in uniform because of his long and intimate service in the cause of medical military education and training, especially that conducted at the Medical Field Service School. He served as an instructor and as a department

director at that institution from 1928 until 1932 and from 1936 to 1939. In January 1947, he became Commandant of the School and remained as such for more than six years. The comprehensive array of technical, graduate and post-graduate courses presently available at the School for all members of the Medical Service is a monument to his stewardship. He is probably best known for his work in field medicine where his influence and efforts are reflected in our modern system of training, management and employment of medical personnel, units and installations in peace and in war. Many of our modern practices in field medicine are the result of his foresight and acumen throughout the years, which brought the development and integration of the medical auxiliary services into our Army Medical Service. He has had much to do in developing our Medical Service which is today geared to render total medical service to our troops under any and all conditions.

For his outstanding contributions to military medicine in peace and war, General Martin has been awarded many honors, including the Distinguished Service Medal, the Legion of Merit, and the U. S. Typhus Commission Medal. Foreign nations have also awarded him honors for service to their fighting forces in World War II. These include the French Croix de Guerre, the

British Order of the British Empire, the Brazilian Medal of War, the Italian Order of the Crown and the Medal of Valor, the Czechoslovakian War Cross—1939, and the Polish Golden Cross of Merit with swords.

General Martin is the Army Medical Corps' senior general officer on active duty. He was appointed a Brigadier General, U. S. Army, in January 1944 and continued in that grade until his appointment as permanent Major General, Medical Corps, in May 1949. In July 1953, he relinquished command of Brooke Army Medical Center, San Antonio, Texas, to become the Chief Surgeon, United States Army, Europe, the position he now occupies. With Mrs. Martin, the former Margaret A. Shander of Chicago, Illinois, he resides in Heidelberg, Germany. The Martins have five children—three sons, all in Army Service, and two daughters. Lt. Colonel George W. Martin, MC, is stationed at Fort Sill, Oklahoma; 1st Lieutenant Joseph I. Martin, Jr., MSC, in Germany; and Corporal Robert E. Martin at Fort Sam Houston, Texas. One of the daughters, Dolores, is the wife of Lt. Colonel Orville Tackett, MC, of Fort Sill, Oklahoma.

The Association has chosen well in selecting this distinguished leader and outstanding Army authority in military medicine to continue the long line of its illustrious presidents.



AERO MEDICAL ASSOCIATION MEETING
HOTEL STATLER, WASHINGTON, D.C.
MARCH 21-23, 1955

Presidential Address*

By

LEONARD A. SCHEELLE, M.D.

Surgeon General, U. S. Public Health Service, Department of Health, Education and Welfare

IT IS a great pleasure to welcome so many members of our Association of Military Surgeons of the United States to this Sixty-first Annual Convention. This is the sixty-third anniversary of the Association. We lost two conventions in war years—but both the Association and the Annual Convention have now entered what we politely call the “middle years of life.”

As we think of what has been going on in the past year, I think we will agree that the Association is enjoying a remarkably healthy maturity. Our constitution provides that the presidency of the Association be rotated through the organized medical services of the Government. That, of course, is the reason that I stand before you this morning as President and why the theme for this convention is “Maintenance of the Nation’s Health.” For the Public Health Service could scarcely be involved in a convention program without taking advantage of its prerogatives and injecting the subject of national health. I shall touch upon this theme later—and especially on the subject of the aging.

Let us first give the Association a brief health examination. I believe we will find it healthier than ever before—with evidence of a capacity to grow and develop that we rarely find in older people. I hasten to add that this vigorous response is not due exclusively to the ministrations of the Public Health Service this year. The signs of progress over the past year are the result of joint planning and action in which many people have participated over the years.

Perhaps the most invigorating event in the life of the Association this year was the

timely arrival of Colonel Robert E. Bitner to assume the offices—and heavy responsibilities—of Secretary of the Association and Editor of *THE MILITARY SURGEON*. The resignation last March 1 of Dr. Royd R. Sayers as Secretary and of Colonel James M. Phalen as Editor would have left the Association in a critical situation had not Colonel Bitner been available.

In this connection, I am sure that the entire membership joins me in regretting the sudden death of Colonel Phalen on October 5, 1954. It is fitting that we should at this time pay tribute to his fourteen years of able and devoted service to the Association as Editor of *THE MILITARY SURGEON*. At the time of his death, he was still serving as Editor Emeritus, and his interest in the Association continued to the last.

THE MILITARY SURGEON has acquired a new look as well as a new editor, and shortly we expect to give it a new name: *MILITARY MEDICINE*. As you know, the Executive Council has long been considering a new title and now has given its blessing to this change.

MILITARY MEDICINE is a more accurate term to convey the broad interests, activities, and membership of the Association. In the current era of specialization, the word “surgeon” means “operating physician” to the majority of people outside military circles. Symbolically, therefore, the old title placed limitations on the journal. It has deprived the Association of some revenue in the form of advertising fees, because the products of some manufacturers and distributors do not lend themselves to advertising in surgical journals.

A new cover has been designed to carry the journal’s new name. I am sure that the modern design and type will appeal to you and others. I would urge you also to use your journal more than you have in the recent

* Delivered at opening ceremonies, 61st annual convention of the Association of Military Surgeons of the United States, Statler Hotel, Washington, D.C., November 29, 1954.

past. There should be a much heavier flow of articles from our membership. The Association has able men and women in such a variety of fields that there should never be a lack of challenging materials for the journal.

Another evidence of progress during the year is that we now have better housing for our Association. On June 1, the central office moved to the New Medical Building at 1726 Eye St., N.W., just three blocks from this hotel. The Association now has quarters in a modern office building, and with new modern furnishings. The staff is most eager to welcome you there at any time you can drop in during the convention—or later. We are all indebted to Brig. Gen. L. C. Fairbank for his help in securing the new office.

During the year, two new awards have been added to our Association's distinguished list of medical honors. The first is to honor the memory of Rear Admiral Edward Rhodes Stitt and will be known as the Stitt Award. The second, the McLester Award, is to honor the memory of Colonel James S. McLester of Birmingham, Alabama. I shall not stop to describe these new awards in detail, since you will find the full story of both in your programs and will hear about the first recipients Wednesday evening at the Honors Night Banquet.

The Association has long discussed the possibilities of opening sustaining memberships to firms in the pharmaceutical and related industries with a health and medical interest. I am happy to report that the Sustaining Membership program is now an accomplished fact.

Twenty-four firms are already on the list of Charter Members. You will find a copy of the list at the registration desk and it will appear in the January issue of *MILITARY MEDICINE*. Brigadier General James McCallam, U. S. Army, Ret., is heading this program for the Association and wishes interested persons to know that all organizations that become Sustaining Members before December 9 will be placed on the Charter Membership list.

I wish to express our appreciation to the firms who have joined the Association.

Another milestone of 1954 is the activation of the Association's Group Insurance Program. We now offer our members a plan comparable with that offered by other medical societies. The details will be presented to you during the convention by Mr. F. W. McCormack, of Philadelphia. Suffice it to say that I believe you will find the plan worthy of your attention and participation.

Any association, whatever its age and prestige, must have new blood to continue—new members. Despite the normal attritions of time and circumstances, our membership has grown this year, although not nearly enough to satisfy us. Especially welcome in these additions are our colleagues and associate members from other countries. At this 61st Convention, the Association is proud to recognize the many representatives from foreign countries as members and fellowworkers in military medicine.

In promoting membership, we must raise our sights still higher. Every member should make himself a recruiting officer. Speak to your colleagues, especially the younger men and women, about our Association. Tell them about its new services and its many opportunities for fellowship and exchange of experience and information.

I would like now to speak to you for a few minutes about the maintenance of national health from the viewpoint of the Public Health Service.

Maintenance of the Nation's civilian health is the primary function of the Public Health Service. The functions and facilities of the Service comprise a strategically important element in the Nation's total health resources. Our major functions are: the conduct and support of research in medical, sanitary engineering, and public health fields; the operation of hospital and medical care programs for certain Federal beneficiaries; the operation of such national services as foreign quarantine, vital statistics, control of biologic products, and water pollution control; and cooperation with the States in public health

programs and in the construction of hospitals and other health facilities.

These programs are conducted in three operating bureaus: the National Institutes of Health, the Bureau of Medical Services, and the Bureau of State Services. However, this organizational structure is one of emphasis rather than of exclusive jurisdiction. Each bureau has some share in all of our major functions. The Assistant Surgeons General in charge of the several bureaus are not only responsible for the administration of specific programs, but also serve in a staff capacity to advise on the coordination of programs in their areas. In addition, we have chief professional officers in the fields of sanitary engineering, dentistry, nursing, and pharmacy who participate in program administration and in staff capacities.

The Public Health Service plays an important role in the health activities conducted by other parts of the Federal Government. Many departments and independent agencies require the services of highly qualified personnel to carry out the health phase of programs designed to accomplish other primary purposes. For more than 40 years, the Service has had the legal authority to provide professional staffs and consultative services to such parts of the Executive Branch as request them. The assignment of such personnel is on a reimbursable basis, except in cases where we have a statutory responsibility.

In describing the multiplicity of health activities in the Executive Branch, the first Hoover Commission Report lauded the value of this function of the Public Health Service. The device of assigning Public Health Service officers and providing expert consultation not only prevents overlapping of health functions, but also assures uniform professional standards of recruitment, and promotes coordinated planning and efficiency in health activities of the Government. The Service is proud of the role it has played in this respect.

During the past year, we have rendered such services to the Departments of State, Treasury, Defense, Interior, Justice, Labor

and Commerce, and to the Atomic Energy Commission, the Foreign Operations Administration, the Federal Civil Defense Administration, and several other agencies. In addition we have engaged in numerous cooperative projects in military medicine with our colleagues of the Army, Navy, Air Force, and Veterans Administration. Public Health Service personnel also have been requested to serve on the staffs of various Executive Commissions and Committees engaged in studies related to the Nation's health and health resources.

An evaluation of the health status of the American population depends somewhat upon the point from which one views the available data. We have one of the lowest general death rates in the World—between 9.5 and 10 per 1,000 population. Our maternal and infant mortality rates, which two decades ago ranked high among all highly developed countries, now compare favorably with those in Northwest Europe, Canada, Australia and New Zealand. However, there has been no marked change in our crude death rate since 1950. This leveling-off is to be expected, perhaps, since a larger proportion of the population is living to old age.

Deaths and prolonged illness due to tuberculosis, syphilis, and other infectious diseases also continue to decline. However, at least 100,000 cases of tuberculosis, 90,000 cases of syphilis, and an estimated 1 million cases of gonorrhea are occurring annually. The positive prevention of epidemics of virus infections such as influenza and poliomyelitis has not been fully accomplished, although the newer immunizing agents give great promise.

In comparison with the general health status of underdeveloped countries of the world, that of the United States ranks high. This is due not only to our more effective control of communicable diseases but also to our much higher standard of living which assures good nutrition, education, better housing, and safer community environments to the majority of our people.

As you know, the Public Health Service maintains close liaison with the World

Health Organization, the Pan American Health Organization, the State Department, and the Foreign Operations Administration. In this connection, we recruit and supply the professional health personnel assigned to United States missions to underdeveloped countries. Our health teams are having the invaluable experience of working with these governments in the development of broad public health and medical programs for millions of people who have never known high standards of living or high quality health services.

During the past year, the Congress delegated to the Public Health Service the responsibility for the health, hospital, and medical services for the American Indian population both in the States and in Alaska. We are at present working out our plans for greatly improved health service to the Indians which we hope will go into effect next July.

The picture of American health with respect to chronic diseases and mental illness is the reverse of the situation in infectious diseases. Death rates from cardiovascular diseases and cancer, for example, continue to rise annually. The chronic diseases affect all age groups, but their most serious effects strike with particular intensity in the productive years—from age 25 onward—and with increasing frequency in later life.

At present, 8 in every 100 Americans are 65 years of age or older and in a very few years the ratio will pass the 10 percent mark. As deaths from acute diseases continue to decline, and as more individuals attain advanced age, we must anticipate continued increases in the numbers of people affected by chronic diseases, congenital impairments, and mental illness.

Illness, injury, and premature death impose a heavy burden on the national economy. Their most prominent effects are in the loss of productive labor and income, the creation of dependency, and the mounting demand for more goods and personnel to serve the sick and injured. Estimates presented to a Congressional Committee last year indicated an

annual loss of 175 million man-days due to heart disease alone, and 150 million due to arthritis and rheumatism.

It has been estimated that more than \$1.5 billion in Federal, State, and local funds go for public assistance payments to disabled individuals. The direct costs of sickness to the taxpayer are even more startling. The total Federal expenditure for civilian health and medical services amounts to considerably over a billion annually and nearly two-thirds of this expenditure is for hospital and medical care, chiefly for our large group of veterans. State and local governments spend more than one and a half billions of their own tax funds each year for hospitals and medical care.

Many of the diseases and physical handicaps which cost the Nation such staggering sums could be prevented or their disabling results alleviated. At present rates, one of the few firmly predictable economic indices is a steadily rising cost of disease—unless increased emphasis all along the line is placed on prevention and on the reduction of prolonged disability.

The basis of progress in this direction, of course, is medical and related research. And progress is being made. Support of medical research from both private and public sources has been greatly augmented in the past ten years. Current support for medical research from all sources—philanthropy, endowment, industry, and government—totals about \$173 million a year.

Much promising work is underway in our Public Health Service facilities, as well as in hundreds of private institutions which have received research and training grants from the Service. During the past year we have opened our new Robert A. Taft Engineering Research Center at Cincinnati, where an intensive program is being conducted to increase our investigation of environmental health problems including water pollution and air pollution. Research in this field complements the Public Health Service's major research activity at the National Institutes of Health with its Clinical Center at Bethesda,

Maryland, and our Communicable Disease Center and its field stations, with headquarters at Atlanta, Georgia.

During the past year, several important findings have been reported by investigators at the National Institutes of Health. In cooperation with our colleagues at Walter Reed Army Hospital, and the Armed Forces Institute of Pathology, for example, scientists on the staff of the National Microbiological Institute demonstrated that toxoplasmosis is the cause of a large percentage of uveitis, which in turn causes at least 6 percent of all blindness in the United States. At the Clinical Center, ophthalmologists are investigating the effectiveness of several chemotherapeutic agents in the treatment of uveitis due to toxoplasmosis.

Cooperative experimental and clinical research in epilepsy at the National Institute of Neurological Diseases and Blindness has identified a specific biochemical deficiency—glutamic acid—in epileptic brain tissue. There have also been encouraging results in reducing seizures through the administration of at least two drugs—glutamine and asperigine.

More recently, two new steroid compounds—metacortandralone and metacorandrasin—in clinical trials by our National Institute of Arthritis and Metabolic Diseases have been found effective in the treatment of arthritis patients who did not respond to cortisone or other forms of therapy. The new steroid compounds appear to produce remarkable and prompt improvement with low dosage and without most of the side effects of other drugs.

The Public Health Service performs a distinctive activity in its programs of assistance to the States. The development and demonstration of new methods, as well as technical and financial aid to the States, are the functions which actually put research findings to work in the reduction of deaths and disability.

The long-standing cooperative relationship between the Public Health Service and the State and Territorial health departments

makes it possible for their combined resources to provide our citizens with a nationwide network of agencies equipped for prompt action in the control of epidemics and in restoration of vital health and sanitation services in time of disaster. The activities of the Public Health Service which make this close liaison possible have been conducted with striking success in the control of venereal diseases, tuberculosis, malaria, and many other diseases of vital significance to military medicine. During the past few years, our cooperative efforts have extended to radiation exposure, biological warfare, and other civil defense problems.

The hospital and medical care programs of the Public Health Service are especially well known to our colleagues in the Armed Forces and the Veterans Administration. Perhaps only the Veterans Administration is experiencing somewhat the same shift in the average age of its patients and the nature of their illnesses, as is the Public Health Service. The Service has provided hospital and medical care for American merchant seamen since the inception of the former Marine Hospital Service in 1798. During the past ten or fifteen years, the average age of our seaman-patients has increased over five years.

In the same period, there has been a striking decline in infectious diseases as causes of illness, while chronic conditions and mental disorders have increased.

Owing to the ever-rising costs of hospitalization, our medical care program places increased emphasis on preventive medicine. We are operating more well-equipped diagnostic and treatment facilities for ambulatory services, designed to keep the patients healthy and on their feet, rather than occupying costly beds. Recently, we have cooperated with the U. S. Coast Guard, shipping companies, and seamen's unions in developing physical standards for specific jobs.

I hope that this general review of Public Health Service activities and the State of the Nation's health has given you some idea of the scope of the problems with which the country is faced in the vital areas of health

research, medical and hospital services, and public health programs.

In conclusion, I want to express my gratitude to the members of the Association for their unflagging enthusiasm and cooperation. I wish to thank especially the Executive Council for its support and progressive actions throughout the year. Without the help of the Council, my fellow-officers, Colonel Bitner, and other members of the Association's staff, I could not have fulfilled my presidential responsibilities.

I would like also to single out for special praise the Chairmen and members of the Convention Committees. Without their interest and hard work, you would not have had such a splendid program and such an entertaining round of activities during our three days together.

Finally, I would like to call attention to the excellent program that the members of our Ladies Committee have arranged for wives who have accompanied you.

The Role of the Army Medical Service in the Maintenance of National Health*

By

MAJOR GENERAL GEORGE E. ARMSTRONG
The Surgeon General, U. S. Army

THE Army Medical Service exists for one reason only, to conserve manpower and to preserve the strength of the military forces. In order to carry out this assigned mission, it must remain constantly alert to develop and employ progressively better methods to maximize this country's fighting strength by safeguarding the lives and health of military personnel, their dependents and others who are authorized Army medical care. In so doing, the Army Medical Service has frequently found it necessary to pioneer new developments in the field of medicine. In this manner many valuable contributions, applicable not only to the field of military medicine but to the maintenance of the national health as well, have come into being; for rare indeed is that development in the field of medicine which has no application beyond the military sphere. Some contributions are easily measured and readily understood; others so intangible they almost defy measurement.

While the search for new developments in the field of medicine is a continuous one, as far as military medicine is concerned the greatest stimuli to the research and development programs tend to occur during times of stress and conflict or immediately thereafter. No one likes war or favors it, but certainly we must acknowledge the fact that whenever it has occurred it has served as a tremendous stimulus to medical research. In this year in which we celebrate the 100th Anniversary of the birth of William Crawford Gorgas I believe it is appropriate to recall that his life work presents many outstanding examples of knowledge and experience, gained primarily through military endeavors, being carried over to improve the general health and well being of civilian communities. That he was particularly outstanding in his accomplishments in Cuba, Panama and other areas of the world is today a matter of record. Likewise let me recall to you that DDT, although synthesized as early as 1870 by a Swiss chemist, remained on the shelf as an obscure laboratory finding until World War II when, after the elimination of various sources of insecticides it was brought

*Delivered at the opening ceremonies of the 61st annual convention of the Association of Military Surgeons of the United States, Washington, D.C., November 29, 1954.

out as a substitute for arsenic; and it came of age during the winter of 1943-44 when it successfully stopped the Naples outbreak of typhus fever. In the same way penicillin, known since 1929, required the stimulus of war needs before successful large scale production was achieved and it became a major component of the therapeutic armamentarium of every physician.

The Army Medical Service, with its requirement for operation anywhere in the world, must maintain a continuing interest in all of the communicable diseases. Obviously, should such diseases ever again become problems in this country, the information deriving from these studies would be directly applicable to the overall national health. Our work in these fields is well known and we plan to continue and expand these programs.

Much of the needed information can be obtained only through the use of volunteers. This fact has been emphasized in resolutions transmitted to the Secretary of Defense by the Division of Medical Sciences of the National Research Council and the American College of Surgeons. Approximately two years ago the Medical Policy Council of the Department of Defense endorsed these statements. It is with considerable pride that I bring to your attention the fact that we have never failed to have the fullest cooperation of these self-sacrificing groups of individuals. Our military medical debt to such volunteers, which began with the work on yellow fever, has increased markedly in recent years and will continue to grow larger.

Quantitative data deriving from investigations now in progress is expected to materially enhance our ability to evaluate the magnitude of risk from various specific disease agents from the standpoint of their normal epidemic potentialities or in the event of their deliberate introduction into this country by an enemy. Likewise, we expect to obtain a more finite evaluation of our vaccination and chemo-therapy as methods of prophylaxis, to evaluate the role of living agents as vaccines, and to determine the level

of effectiveness of our current methods of treatment.

So far as specific diseases are concerned, I would particularly invite your attention to the recent studies on scrub typhus, typhus, typhoid, vivax malaria, infectious hepatitis, and dengue. Last year at the 60th Annual Meeting of this Association, it was my pleasure to discuss a number of recent advances in the field of military medicine. At that time I reported to you on the dramatic victory over malaria accomplished by the use of chloroquine and primaquine, on the research and training programs in vascular surgery which have resulted in a marked reduction in amputations and on the major advances made in the field of patient evacuation by the use of regimental medical companies, mobile surgical hospitals, and helicopter ambulance units. That these all have had an important bearing on the maintenance of national health goes without saying. Primaquine has prevented the widespread reintroduction of vivax malaria into this country by returnees from the Far East. The marked reduction in amputations has reduced the number of individuals returned to the United States requiring prolonged hospitalization and prosthesis, while the improvement in front line medical care and evacuation, in addition to saving lives, have undoubtedly shortened the hospitalization and reduced the number of permanent residual medical defects in many instances. These are among the tangible things, some of the easily measured contributions of the Army Medical Service to the maintenance of national health.

At other medical meetings throughout the year I have reported on the progress that has been made in the various research and development programs dealing with use of blood and blood substitutes, the problems of cold injury, the development of protective clothing and lightweight protective body armor, and improvements in the therapy of burns, of hemorrhagic fever, and in the care of the wounded. Notable progress has also been made in numerous other fields including the treatment of shock, control of infections,

stress, wound debridement and closure, and many others. Again these are among the more easily measured contributions of the Army Medical Service to the maintenance of national health.

There are a number of other contributions however, that while so intangible they almost defy measurement, are nevertheless of paramount importance to the maintenance of national health. Perhaps the major contribution is that achieved in carrying out the assigned mission to conserve fighting strength. This is the maintenance of an Army of healthy, physically fit individuals, who possess the know how of maintaining this state regardless of environmental hazards and are thereby able to carry out whatever task may be assigned to them in any part of the world. The importance of this achievement not only as regards the health of our nation but its welfare as well, I believe, need not be stressed further to this group, for I am sure you are all aware of what has happened to nations in the past when their Armies have been rendered noneffective by disease and injury.

To achieve this objective it is necessary for the Army Medical Service to operate a comprehensive health service including an extensive program of health education designed to promote health by reaching and influencing every member of the Army, a broad program of preventive medicine, and a vast program of medical care. To implement these programs, it is necessary for the Army Medical Service to operate one of the largest hospital systems in the world, to pioneer new developments in both curative and preventive medicine fields through medical research and development and to provide the personnel necessary to accomplish its mission with professional training programs unsurpassed anywhere.

This total health program begins to exert its influence on the individual even before he becomes a member of the Army. Since the Army Medical Service is responsible for the health of the soldier it is only natural that it should exercise considerable care in select-

ing those individuals who are to become members of the Army. Therefore, at the induction station where all individuals receive a thorough physical examination prior to entering on active duty those not physically fit are rejected for service. This thorough physical examination is performed by a well organized and well trained team of medical personnel. Standards have been set by the Army on experience data. For many individuals this is probably one of the first complete physical examinations they have ever had and frequently existing unknown defects are discovered. If the defect is of minor importance the individual upon entering the service will have the full facilities of the Army Medical Service available for its correction. On the other hand should the defect be such that the individual is rejected for service, he has been provided with knowledge of his physical condition and may undertake remedial action where indicated. In the event a serious communicable disease such as tuberculosis is uncovered, the local civilian health authorities are notified. In this way existing unknown infectious diseases are brought to the attention of appropriate health authorities in order that they may take necessary steps to protect the other members of the individual's community as well as providing proper disposition of the case. This physical screening conducted through the Selective Service System has also provided valuable data relative to the physical status of the youth of this nation which is available to schools, health, and other officials concerned with the health, welfare, and development of our nation's youth.

Once he enters on active duty, the individual comes under the full scope of the Army's health program, manifested primarily as a continuing process of health education. The various aspects of a total health program are repeatedly demonstrated to him in one fashion or another during his service life. By means of this continuous health educating process he becomes acquainted with the numerous measures utilized by the Army Medical Service to protect his health and learns how these measures, designed both to

fit the individual to his environment and the environment to the man, are established for the purpose of attaining total health.

Throughout this program the emphasis and scope of the effort are directed toward conditioning the individual. Early in his military career he is given prophylactic immunizations against a number of diseases. He is taught the benefits of physical training, the techniques of keeping physically fit, the essential elements of personal hygiene and first aid, how to protect his health in areas where sanitation is minimal and diseases uncommon to home are prevalent, and how to live and remain well under adverse conditions of heat, cold, stress, and disaster. Complete medical and dental care are available to him at all times and it is a rare person, indeed, who does not soon realize the importance of early, adequate medical care. Whenever possible, even the environment is manipulated to protect him by such means as the provision of a safe, adequate water supply, insect and rodent control programs and a host of other measures.

The scope of the health program is such that it extends even beyond the soldier, for medical care and hospitalization are frequently available to his dependents as well. Already operating at a number of posts, Army Health Nursing Programs and School Health Programs furnish his dependents with services similar to those available in many civilian communities. Perhaps the major benefit derived from these programs results from their health educating effect upon the individual.

In a recent report on "The Toll of all Major Diseases—Their Causes, Prevention and Control" submitted by the Committee on Interstate and Foreign Commerce to Congress it was noted that "more is now known about the prevention and control of many diseases than is being applied." It was pointed out that this is often the result of a lack of education and motivation on the part of the public. The Army Medical Service strives vigorously to close this gap and to provide proper education and motivation in

health affairs both on the part of medical personnel and other components of the Army.

In the Army Medical Service, the soldier finds the professional personnel providing his care are practicing medicine and dentistry of the highest standards. Many have been trained under the Army's residency program wherein advanced postgraduate training in the various specialties is made available to those officers desirous of increasing their professional knowledge and competency. This training likewise may fulfill an important segment of the individual's requirements for board certification in his chosen specialty. Many officers currently on active duty are certified as members of their respective specialty boards. In carrying out their assigned mission, they will be employing the numerous new techniques developed under research and development programs.

Although military medicine is a profession all its own, nevertheless those who pursue it, even if only temporarily, will derive from it numerous experiences and skills which are important in the maintenance of the nation's health. In the event the military medical officer returns to civilian practice he will find his knowledge of military medicine useful in both his private practice and in community undertakings. His military experience in most instances may be used for a certain amount of credit toward his board certification if he is not already certified. Likewise his standards of professional care will be high. During his military service he has had the opportunity to practice good medicine backed up with adequate laboratory and hospital facilities. He undoubtedly will endeavor to maintain similar high professional standards in his own community. The community will also benefit as a result of his service experience. His knowledge and appreciation of preventive medicine attained during a tour of duty will make him public health conscious as a practicing physician in his community. Through cooperation with the local health department numerous benefits, intangible though many may be, may well be expected as a result. Even more important how-

ever will be his contribution to local disaster and civil defense programs. In these days of atomic weapons with their potentiality of suddenly inflicting tremendous casualties over a large area, knowledge by physicians, dentists and allied scientists in the handling of large numbers of casualties, providing emergency medical treatment, and evacuation to areas where more definitive care is possible, is of paramount importance. Service experience and training is one of the surest means of acquiring this essential knowledge.

The contributions to the nation's health provided by the individual as a result of his military experience are not easily measured. That they are important and real, however, I believe you will all agree. Let us briefly, in summary, then consider an individual who has experienced or may continue to experience, a continuous process of education in health matters during his service tour. We have here a man who has learned the value of keeping fit, the importance of the early correction of physical defects and one who has come to realize the value and importance of good medical and dental care by being exposed to it. He has had the opportunity to observe high standards of medical care provided by competent professional personnel, has come to appreciate good hygiene and sanitation, the value of immunization procedures and a multitude of other health practices. In this way, although he probably was not always aware of it, he has seen and taken part in the various aspects of a comprehensive health program. He has seen preventive medicine, curative medicine, rehabilitation and other phases of the program in action. Although not formally labeled as such, they have been presented to him as essentially a continuing process of health education. It is certainly not unreasonable to assume, therefore, that this individual either in civilian life or living in a civilian community will have definite standards of health as a result of these experiences. In addition to

the value of personal or individual health matters he has also experienced the ramifications of group living in a military community. Because of these experiences I believe we may reasonably assume that this man may be expected to contribute in a wholesome and important way to the best interests of his civilian community, particularly on problems dealing with health, for he certainly will realize their importance. He should be the type of individual who will exhibit an interest in such environmental matters as a safe water supply, a sanitary sewage disposal system, good medical care, adequate hospital facilities and other health practices affecting his own community. The concept of teamwork and the importance of being a member of the team realized during his service tour should further help stimulate this interest in community health problems.

These developments, both tangible and intangible, big or little in themselves, I believe, are important contributions to the nation's health, to the National Defense, and to the welfare and happiness of the American people. They are not alone the results of the endeavors of the Army Medical Service. We have labored with our sister services and with other health and medical agencies in government. Even more importantly, we have worked in mutual accord with the civilian medical profession who in their high sense of patriotism have given us fully of their knowledge, experience, and time in forwarding health and medical affairs in the Service.

The Twentieth Century has seen drastic changes in the social and economic structures of our Nation. Two great world conflicts have dictated rapid progress in medicine; the future we may face demands that we consolidate all of the gains for the Nation's interests and that we go forward in a cooperative and rapid development of all phases of medicine to the betterment of the Nation's health and the National Defense.

The Role of the Navy in the Maintenance of National Health*

By

REAR ADMIRAL H. L. PUGH (MC)
Surgeon General, United States Navy

MANY diverse organizations and a host of devoted men and women cooperate in the rewarding task of keeping this nation strong and well. Isolated general practitioners, famous specialists, medical schools, clinics, hospitals, public health departments, and research institutes all contribute their indispensable part. There remains the vital task assigned to the Armed Forces, in regard to which I speak for the Navy.

The role of the Medical Department of the Navy in the maintenance of national health is actually a quintuplet. First and foremost, the very essence of its mission is to protect from disease and injury and keep in the finest possible state of physical and mental wellbeing a large segment of the population, comprising all active duty naval personnel, their dependents, and four hundred thousand civilian industrial employees. Second, important actions are taken to protect the general public from being infected by agents of communicable disease. Third, a multitude of men are highly trained in various essential health measurers and later return to civilian life, taking with them important knowledge and the fruits of valuable experience. Fourth, and of vast moment only dimly realized by the general public, the Navy in its striving for the highest state of physical readiness has pioneered in scientific advances of great consequence to civilian medicine and public health. Fifth, the Navy acts on a large scale to achieve broad dissemination of new medical knowledge.

To consider the first of the quintuplets, the role of the Navy in maintaining the health of over two million American citizens, there are the peculiar problems related to the close association of large masses of personnel and their exposure to strange environmental and disease hazards, so that the emphasis given to preventive medicine is almost beyond comparison with that accorded it in civilian practice. Where else than in the military would you find every person protected by inoculation against typhoid fever, tetanus, and smallpox, or so extensive an inoculation program for diphtheria and influenza? Each of the hundreds of thousands of men so inoculated not only gains personal protection but also reduces the danger to the general public of exposure to these diseases.

Environmental sanitation is of necessity given special attention, in particular training of food handlers and providing for hygienic housing. An organization of highly skilled experts goes into action to put a quick end to any epidemics. An extensive program for education of all personnel in hygienic measures stresses avoidance of the venereal diseases and reduction of automotive accidents. Preventive psychiatry forestalls innumerable nervous, emotional, and mental breakdowns and assists many persons who have run into difficulty to make necessary adjustments. Periodic physical examinations, while not unique to the Navy, are notable in their universal employment with such a large body of men. Especially noteworthy is the extensive program for early detection of incipient tuberculosis. In regard to cases of new infection with a venereal disease, trained investigators attempt to locate all contacts, who are then reported to local public health authorities, thus contributing to venereal disease

*Delivered by Rear Admiral John Q. Owsley, Medical Corps, U. S. Navy, at the opening ceremonies of the 61st annual convention of the Association of Military Surgeons of the United States at Washington, D.C., November 29, 1954.

control in the civilian population.

Prompt isolation and treatment of cases of communicable disease of any kind assists in limiting their spread, and special attention is given to preventing the importation of diseases from abroad either by insect vectors or by infected personnel. Malaria, tuberculosis, leprosy, and various parasitic diseases are among those guarded against. On Military Sea transport ships returning many thousands of military personnel from Korea naval doctors carried out wholesale, curative treatment for latent infection with far-eastern strains of *Plasmodium vivax*. It is believed that many American communities were thereby prevented from experiencing epidemics of malaria.

Because of the great number of officers and enlisted men who yearly return to civilian life after long or short hitches in the Navy, the populace is continually being leavened with the knowledge of measures important to civilian health that these men carry back with them. Every one of our roughly thirty thousand hospital corpsmen is given, at the very least, a basic training course that includes simple material on anatomy and physiology, first aid and emergency procedures, nursing, diet, preventive medicine, pharmacology, pharmacy, chemistry, laboratory technics, and medical aspects of atomic, chemical, and biological warfare. Although the basic course is introductory only, valuable experience is gained in most of these subjects on wards and in special assignments. Promising men are given technician training courses in sanitation and food handling, pharmacy, roentgenology, dentistry, and numerous other fields.

The medical officer who has served even two years in the Navy is likely to have had experience in preventive medicine and sanitation, in dealing with exotic diseases, in handling mass casualties, and in leadership and organization. What he has gained should enhance his value to the community in which he settles.

The extent to which the phenomenal ad-

vance of medical science has been aided by Navy or Navy sponsored activities is known only to a few. In some cases, completely new concepts have been advanced or valuable equipment invented; in the majority, as everywhere in medicine, advance has been made on the foundations of earlier work and has consisted of important development or improvement. In addition there have been extensive field trials of new drugs or equipment, possible only under special conditions existing in the Navy, such as pertain to an aircraft carrier on an extended cruise. The use of penicillin as a prophylactic measure against gonorrhea is an example of taking advantage of these conditions, as is a series of studies of nongonococcal urethritis.

Among pioneering developments is that of the Naval Medical Center, Bethesda, of the Tissue Bank for storage of freeze-dried materials for homografts. These include arteries, skin, bone, tendons, and dura mater. Bethesda is also the center of extensive study of radioisotopes as a diagnostic tool.

Sponsorship by the Office of Naval Research of a colony of germ-free animals at the University of Notre Dame is bringing interesting results. In the absence of microorganisms these animals do not appear to develop dental caries. If inoculated with a pure culture of *Endamoeba histolytica* they do not develop the ulcerations typical of amoebiasis, perhaps because this depends on some sort of symbiosis.

Studies of epidemic control under possible conditions of bacteriological warfare, at Naval Medical Research Institute No. 1 in San Francisco, led to the perfection of a mouth-wash technic for positive diagnosis of tuberculosis.

At the Medical Research Laboratory, Submarine Base, New London, improved methods for testing color vision have been developed. Dark glasses have been produced that offer real protection when such is needed. As part of Submarine Medicine, problems in humidity, and effect of carbon dioxide and other fumes have been studied with findings useful in any situation where

similar conditions occur. Better tests of extent of hearing loss have also been formulated, as well as devices for protection against noise.

Office of Naval Research sponsored studies at the University of Pittsburgh that point to the early presentation to world medicine of a greatly improved tetanus toxoid, made from strains of *Clostridium tetani* that produce an increased amount of toxin.

Beginning during World War II, far-reaching contributions were made to many phases of rehabilitation by a number of naval activities such as the Naval Amputation Center, Mare Island, and the U. S. Naval Hospital, Philadelphia. These concerned not only amputees but also those with loss of hearing, speech, or sight, and neuropsychiatric cases. The acrylic eye and plastic glove were developed, and improved prostheses for above-elbow and below-knee amputees.

During World War II and the Korean conflict, methods of wound treatment were improved, with definition of the optimal time for surgical intervention and more effective technics for repair of peripheral nerve lesions. Studies were made of the use of fibrin foam and oxidized cellulose for control of hemostasis. In the search for plasma substitutes, naval activities stimulated the refinement of dextran from the original Swedish product to the point where it could be employed with safety. Studies were also made of glycerol pectate as a plasma expander.

The development of the armored vest and boot was responsible for a tremendous reduction in injuries to the vital chest area and to the foot.

Of wide interest to all who in this age of travel may go to areas of extreme temperatures or suffer shipwreck, are the many naval studies of survival in frigid areas, in the tropics, or adrift at sea.

Very extensive and elaborate studies have been made by Naval Medical Research Unit No. 3 in Cairo, Egypt on the definition, diagnosis, control and treatment of a long list of

diseases especially prevalent in North Africa, Arabia, and western Asia. These findings have special usefulness because of the increase of foreign travel of the operations of commercial firms abroad.

From the Field Medical Laboratory, Camp Lejeune, and from other naval activities, have come important contributions to Civil Defense. These include methods of handling mass casualties, designs for shelters, and in particular leadership in the theory and practice of atomic defense.

Aviation Medicine has been prolific in developing concepts, methods, and equipment for protection in flying personnel, useful in civilian as well as in military aviation. At the Aviation Medical Equipment Laboratory, Philadelphia, School of Aviation Medicine, Pensacola, and Aviation Medicine Acceleration Laboratory, Johnsville, studies of anoxia, aero-embolism, gravitational forces, extreme heat or cold, flying fatigue, and intense sound fields have resulted in effective counter-measures. Improved oxygen masks, heated flight suits, and G-suits are only a few of the devices and items of equipment produced.

Incidental to studies in Amphibious Medicine, portable forms of medical supplies and equipment have been devised that will be useful under disaster situations, whether involving civilian or military personnel. In a similar way, the Experimental Diving Unit at the Naval Gun Factory, Washington, has developed methods and equipment for safety in diving operations that are equally valuable whether employed in military or civil life.

Industrial operations, of commercial firms as well as in the Navy, will henceforth be attended with less risk to the worker as a result of developments pioneered by naval officers concerned with Industrial Medicine. The use of toxic solvents such as carbon tetrachloride, benzol, and tetrachlorethane, has been notably reduced by substituting less toxic materials; in fact the Bureau of Aeronautics has almost completely eliminated the use of carbon tetrachloride. Similarly, the silicosis hazard has been reduced by wet

sandblasting and the use of slag, peach kernel, and steel shot in place of free silica abrasives. In extreme cases, when dry silica cannot be avoided, the work is done in an enclosed, ventilated booth with the worker outside, except for his gloved hands. Lead-poisoning has been virtually eliminated by the employment of lead-free pigments, respiratory protective equipment, and local exhaust. The use of adequate local exhausts has also markedly reduced metal fume fever, also known as "Zinc chills" or as "galvo poisoning."

The dissemination to those who can make use of it of information regarding all these developments and new methods is of course essential if they are to contribute to the joint maintenance of national health. By publication in medical and scientific journals and to a lesser extent by distribution of research reports, most of the material I have mentioned has been made available to the public. Only where absolutely necessary has dissemination been restricted by classifying re-

ports, and these have been declassified as soon as it was possible.

The Handbook of the Hospital Corps, the basic training manual for hospital corpsmen, has always been freely available for purchase. This is also true of the Color Atlas of Pathology, of which the second of three volumes has just been released, and of the World Atlas of Epidemic Diseases, produced in Germany as a Navy sponsored project.

In the brief time allowed me I have been able only to present you with a bare catalogue listing of the more important aspects of the contributions of the Medical Department of the Navy to the maintenance of national health. Our mission involves guarding the health of a great multitude of American citizens; thousands of men each year return to civilian life carrying with them new knowledge of health measures that will benefit both themselves and their community; and medical and public health workers everywhere have gained by the many scientific advances pioneered by far-flung activities of the Navy.

The Role of the Air Force in the Maintenance of National Health*

By

MAJOR GENERAL DAN C. OGLE, USAF(MC)
Surgeon General, United States Air Force

ON BEHALF of the United States Air Force I wish to extend to each of you a most hearty welcome to Washington and this annual meeting of the Association of Military Surgeons. To those of you who represent our friends and allies of other nations I extend a most hearty welcome to the United States of America. May all of us be benefited by the opportunities here presented for exchanging scientific thoughts and ideas and may each of us ex-

perience a dedication to international good will, to mutual understanding and cooperation within the great fields of medicine wherein lies man's greatest understanding, one people of another.

The role of the United States Air Force in the maintenance of national health differs very little from that of the two other military departments about which you have just heard. The impact of the Air Force Medical Service on our national health and welfare is not easily measurable; however, one's imagination is markedly stimulated by consideration of a number of factors whereby the medical service of the Air Force has a

* Delivered at the opening ceremonies of the 61st annual convention of the Association of Military Surgeons of the United States at Washington, D.C., November 29, 1954.

direct influence on the public conscience in maintaining our national health. I would like to briefly enumerate some of the more significant points of contact or influence that exist between the Air Force Medical Service and the nation at large. Having presented these factors, I'll let each of you judge the extent of the role played by the Air Force in the maintenance of national health.

First, let me give you a general picture of circumstances as they pertain today. Our United States Air Force is largely a citizens' military organization. Its slightly less than one million members are composed of citizens of all walks of life and from every state and territory of the union—a melting pot within a melting pot. This year several hundred thousand young men and women will return to civilian life within their home communities after having served from three to six years with the Air Force in various parts of the world. The Air Force is thinly but widely distributed throughout the world. In addition to the hundreds of small units attached to universities, industrial centers and scientific laboratories, the Air Force sponsors 166 bases in the Continental United States and many others in over seas areas where we serve as guests of friendly nations; where we of America are learning to live with, cooperate with, and understand a broad band of the freedom-loving citizenry of the world. Each year several thousands of various categories of medical personnel enter and leave the Air Force. While in uniform they are actively engaged in learning and practicing the many tasks required of a complete modern medical service. These thousands of people include physicians, dentists, veterinarians, public health specialists, sanitary engineers, allied medical scientists of all kinds, nurses, physical therapists, dietitians, medical science technicians, and many civilian employees. The Air Force continually sponsors many medical training and health education programs graded for both professional and lay understanding. Significant within these special programs are the various courses in aviation medicine, now a

recognized medical specialty associated with the American Board of Preventive Medicine. For the purpose of this discussion, aviation medicine concerns itself with the public interest and safety of air travel and with preventive medicine and quarantine measures required by rapid international travel now possible through the air. In addition to training, the Air Force sponsors medical research projects within our own military medical centers and by contract with a large number of civilian medical schools, hospitals, or laboratories.

What do these few factors that I have just mentioned add up to when we consider the role of the Air Force in the maintenance of national health? First, the several hundred thousand young men and women who will leave the service this year will have learned the advantages of close supervision of their personal health. They will have had repeated physical examinations followed by correction of remedial defects. They will have had training in personal health and hygiene; they will have received dental care and instruction in the care of the teeth and mouth; they will have had an opportunity to observe health conditions in various parts of the world; they will have observed at first hand many of the simple as well as complicated public health and sanitary measures required to make field life tolerable and safe, and their military experience should have conditioned them for a health consciousness that will be with them for many years and which they can make a part of active citizenship within their own community. At the 166 United States Air Force bases within the Continental United States our medical personnel maintain contact with health conditions of each community. Joint medical meetings are held between the military medical units and the local medical societies where there is a free exchange of scientific knowledge and experience. Each Air Force medical staff deals intimately with the local civilian medical structure through a system of frequent visits by medical consultants officially appointed in each area. Air Force Preventive Medicine

teams continually survey the community adjacent to an air base—inspecting public places, public restaurants and general sanitary conditions including the water supply, sewage disposal and other public projects that may have a bearing on health. At each air base the veterinary service continually monitors the milk shed and the processing and distribution of milk. In conjunction with the Departments of Agriculture and Army, the Veterinary Service also inspects all other foods of animal origin and the marketing, storage, and issue practices of all food products designed for military use. These public health measures engaged in by preventive medicine and veterinary teams work to the advantage of the community as well as the military base they are designed to protect. Each year the Air Force, either within its own schools or by contract with civilian schools or other military departments, graduates between six and ten thousand men and women from a variety of courses graded from post graduate medical education for physicians down to technical courses for young men studying to be assistants in preventive medicine, clinical laboratories, X-

ray laboratories, dental clinics, operating rooms, physical therapy clinics, and other allied medical areas. These experienced men and women leave the service to serve in their own communities.

This presentation of necessity has been brief. By the nature of the subjects to be discussed it has been repetitious of factors mentioned for both the Departments of the Army and Navy. However, I believe that the factors mentioned play such an important part, such a forceful and lasting part in the improvement and maintenance of our national health that they might be reported many many times and in many places other than this meeting of the Association of Military Surgeons.

What is the impact of the Air Force Medical Service on our national health? I believe that anyone acquainted with the many relationships that exist between military medicine and the national communities can well judge for himself—military medicine is a great power in maintaining the public conscience and the public competence in maintaining high standards of national health.

The Role of the Veterans Administration in the Maintenance of National Health*

By

VICE ADMIRAL J. T. BOONE (M.C.) U. S. NAVY, RETIRED
Chief Medical Director, Veterans Administration

I WELCOME this opportunity to come before you for the purpose of presenting the Role of the Veterans Administration in the Maintenance of National Health. I have faced this august body in the past as its President, and have faced it on many other occasions, and have always been stimulated by the scientific approach to problems that prevails at these gatherings.

* Delivered at the opening ceremonies of the 61st annual convention of the Association of Military Surgeons of the United States at Washington, D.C., November 29, 1954.

The Role of the Veterans Administration in the Maintenance of National Health! I consider this theme a most happy one, and should like to commend, for their vision, those who were responsible for designating and selecting the titles of the papers we have been hearing this morning from the Surgeons General of the United States Public Health Service, the Army, the Navy, and the Air Force. Too often those who are not engaged in federal medical practice lose sight of the fact that we in government share with them an interest in this Nation's Health. The

Army, the Navy, the Air Force, the Public Health Service and the Veterans Administration all have roles, each of great significance, in the maintenance of National Health. The National Health is the sum total of the accomplishments of all medical forces of this land of ours, military and civilian, governmental and non-governmental. The health of all the people in this great Nation can be improved, maintained and furthered only when all medical forces, each in its own special sphere of activity, work together as a team.

The Veterans Administration operates 172 hospitals, of which 39 are devoted primarily to the care and treatment of the mentally afflicted, 21 to the tuberculous, and 112 to general medical and surgical patients.

Let us for a moment picture these hospitals, situated in the near and far reaches of this country, each a component part of the community in which it is located. Each, by the very nature of its work, its patient complement, its staff, sheds its influence in surrounding areas, some say for good, others for evil. Some look with respect and admiration upon VA hospitals, recognizing them as expressions of a grateful people toward those who heroically carried this Nation's flag on the field of battle in defense of this land of ours; others see in VA hospitals the seedbed of socialized medicine.

To determine the Role of the Veterans Administration in the Maintenance of the Nation's Health, let us examine these hospitals closely on any particular day, such as November 30, 1953, for which census figures are available. You will find 105,000 patients in the hospitals on that day. There are no children hospitalized there; there are but 1,566 female patients—all veterans in their own right—the female patients constituting a mere 1.5 percent of the total patient load. As we look at the patients, it is significant to note that 48 percent of them (just about half) are 50 years of age or older. Can it be that these Veterans Administration hospitals are engaged in caring for the aging and aged of this nation,

those who are afflicted with a multiplicity of disorders characterized by chronicity? To the minds of many, the stirring events on San Juan Hill and in Manila, along the Marne River in France and in the Argonne Forest, on the beach at Anzio and at the Battle of the Bulge, on Okinawa, on Heartbreak Ridge, and at the Inchon Landing seem but as yesterday's happenings. It is seldom realized that the average age of our 21 million veteran population has passed the 38-year mark; the average age of our 3 million World War I veterans is 61, and of our 77,000 Spanish-American War veterans, 77.

Yes, these are aging and aged patients that the Veterans Administration hospitals are caring for. Witness the chronicity of their patient's disorders—64.4 percent of the patients have already been in the hospital more than 90 days, and 49 percent (just about half of all the veterans hospitalized in the Veterans Administration hospitals) have been there more than 1 year. In fact, $\frac{1}{3}$ of all the patients in Veterans Administration hospitals have been on the hospital rolls for over 5 years. These patients are in the hospitals for the treatment of their service-connected disabilities or because they are unable to defray the cost of medical care. Were these Veterans Administration hospitals not in existence, where would these long-term chronic patients be able to obtain the extended care they need? Would there be sufficient State and county institutions to care for this patient load? You know the answer to that. True, these patients are veterans; However, let none forget that they are citizens also. And as these Veterans Administration hospitals extend their hands of healing to this segment of the Nation's population, they thereby play a major role in the maintenance of National Health.

Why these prolonged periods of hospitalization? The diagnoses give the answer. Of the 105,000 patients in Veterans Administration hospitals on November 30, 1953, 49 percent (about 52,000 patients) were afflicted with psychoses, $\frac{3}{4}$ of whom have already been on the hospital rolls for more than 5

years. Another 14 percent (over 14,000) had tuberculosis. These two diagnoses accounted for more than 60 percent of the patient load. Add to this 3,160 patients afflicted with malignant tumors, and another group of approximately the same size afflicted with arteriosclerotic hypertensive, or degenerative heart disease, and almost 2,000 paraplegics, including quadriplegics, and you obtain some insight into the character of the patient load in Veterans Administration hospitals.

It is a tremendous field for clinical study and research. Where else can one find such a concentration, under one administration, of mentally afflicted patients or patients with neurologic conditions, tuberculous patients or paraplegics, cardiacs or cancer patients? What opportunities for research studies! What fertile ground for the advancement of medical knowledge! The Veterans Administration has recognized that and has encouraged the research efforts of our people. Some significant contributions have been made by the Veterans Administration to medical science quite definitely affecting for good the National Health. Let me take this occasion to point to a few.

You undoubtedly have heard of the cooperative study that the Veterans Administration has been conducting since 1946 on the treatment of tuberculosis, in which one Army, one Navy, and forty-six VA hospitals are engaged. This study has concerned itself chiefly with determining the effectiveness of new drugs (of which was streptomycin) which were and are constantly being developed during these recent years. It is remarkable to note that the mortality rate from tuberculosis in VA hospitals has been decreased by approximately 50 percent while this study has been going on, and it seems reasonable to attribute a portion of this decrease to the sound use of chemotherapy. The information gained from this study program has benefited not only the Veterans Administration but the medical profession, the entire Nation, and lands beyond our shores. Copies of the regular reports that

are issued about this study are being sent by request to individuals and libraries in 39 foreign countries, which is an indication of the wide-spread fame that this study has achieved.

Of major importance in the maintenance of National Health is also the Tuberculosis Case Finding Survey Program of the Veterans Administration. Almost a million veteran patients and VA personnel are screened each year for chest pathology. There were 2,056 new active cases that needed treatment discovered in 1953, and 972 new active cases have already been discovered during the first 6 months of 1954. What an impact work of this nature has in maintaining the National Health!

In the field of Psychiatry, the Role of the Veterans Administration in the Maintenance of National Health is equally impressive. The mere mention that, in a single year, 134 professional papers written by VA neurologists, psychiatrists and psychologists were published is sufficient to point to the Veterans Administration's contributions in this specialized field of medicine. Truly, it can be said that the Veterans Administration is in the vanguard of the forces that are pressing forward toward the development of newer, better and more effective measures for the treatment of the mentally afflicted. Innovations in mental hospital design and methods of treatment of the mentally sick, developed by the VA, have been influential in raising the standard of medical care in mental institutions throughout the land. The Veterans Administration looks with pride upon its foster home program for psychotic patients; upon its industrial placement program, where jobs in the communities are secured for our patients; upon its member employment program, where the improved psychiatric patients are discharged from the hospitals but remain at the hospitals as employees; upon its patient employee program, where selected patients, under the supervision of the therapists, are furnished employment as therapeutic measures. Certainly these programs give evidence of advanced thinking in the

field of Psychiatry—a progressive spirit that reflects itself in the National Health of this country.

Investigations into the diagnostic and therapeutic value of radioactive isotopes are going on now in some 30 VA hospitals. Much work is done on radioactive iodine, the radioactive isotopes of phosphorus, sodium, potassium, carbon, iron and gold.

Who has not heard of the research that is constantly going on in the Veterans Administration in the care and treatment of paraplegics? Not so long ago, paraplegics were no problem—they just did not long survive their injuries. Now they do survive, and in an ever-increasing measure they return to gainful, self-supporting and useful lives in the communities following treatment of their injuries. The Veterans Administration points with pride to the more than 3,000 paraplegic patients who have been discharged from VA hospitals able to manage their homes and jobs.

With a case load of about 35,000 amputee veterans, about 27,000 deafened veterans, and almost 2,000 blinded veterans who are receiving either prosthetic appliances or sensory aids from the VA, it is evident why the Veterans Administration is a leader in the scientific studies that are going on continually toward the development of new and improved prosthetic appliances. And what is developed is made available to and benefits the disabled non-veteran as much as it does the disabled veteran.

These are major contributions to the Maintenance of National Health.

These illustrations should suffice to point to the progressive spirit that prevails at Veterans Administration hospitals. This spirit is further enhanced by the many training and educational programs that are carried out at these hospitals. The Veterans Administration is engaged in training physicians and dentists by means of the residency training and other programs; it is training nurses, training social service workers, training psychologists, training therapists and others in the ancillary services; and, yes, also it trains its cooks and bakers and candlestick makers.

A hospital that engages in training programs thereby benefits its patients. This is axiomatic and needs no elaboration on my part before this distinguished and learned gathering. There is, however, a by-product of the VA training programs, the value of which is not always appreciated. Were those whom the Veterans Administration is training to remain with us upon completion of their training, the Veterans Administration would retain unto itself the benefits that flow from their skills and proficiencies. While we like to have our trainees and residents stay with us upon completion of their formal training, a considerable proportion of them seek other pastures. It might interest you to know that about 23 percent of the residents accept employment with the Veterans Administration upon completion of their training. That means that a goodly proportion of highly trained professional and subprofessional people are entering the non-VA medical field each year. This represents a considerable contribution on the part of the VA to the Maintenance of National Health.

I should like to share with you a quotation from a published article by the noted surgeon Doctor Charles W. Mayo, of Rochester, Minnesota, that appeared in the August 1954 issue of the *American Legion Magazine*. He wrote:

"Today, the war veterans in the Veterans Administration hospitals get care that is second to none, in a medical program that is teamed up with leaders in private medicine all over the country. The VA's new, aggressive programs of medical research and education that are carried out in cooperation with leading medical schools and clinics are making an inspiring contribution to national health and medical progress. The Veterans Administration, with its teammates in private medicine, has pioneered boldly all along the frontiers of medicine. It has developed new concepts of medical teamwork with astonishing results in patient welfare."

Words such as these from one who knows, from one who is so fully qualified to weigh and evaluate medical practice, are deeply

gratifying to me, not only in my official capacity of Chief Medical Director of the Veterans Administration but as a physician who takes pride in the noble deeds of my profession. So also was I deeply moved when I learned that the Veterans Administration had been awarded the highest honor of the American Medical Association for scientific exhibits—the Hektoen Gold Medal—at the recent convention of the American Medical Association in San Francisco.

It is not in a spirit of boastfulness that I point to these accomplishments of the medical program of the Veterans Administration. To the dedicated people on the full-time staff in each of the 172 VA hospitals goes the credit; to the equally dedicated people who work in our out-patient clinics scattered throughout the country goes the credit; to the non-VA physicians and dentists, phy-

sicians and dentists engaged in private practice who give of their time and effort to serve our patients as attendings and consultants, goes the credit; to the private physicians who furnish our patients home-town care on a fee basis goes the credit; to the 72 medical schools and all the dental schools of this Nation that have associated themselves with our Veterans Administration hospitals goes the credit. As I look at the accomplishments of their efforts, as I witness this display of fine teamwork, I cannot conceive why some would append the label of socialized medicine upon what we are doing. Veterans Administration medicine is part and parcel of American Medicine. As all segments of American Medicine work together in harmony and mutual trust, then will be achieved ever-greater marvels in the Maintenance of National Health.



Speaking to a class of officers of the Marine Corps School in Quantico, Virginia on July 19, 1954, Secretary of the Navy Charles S. Thomas said:

"The relation between officers and enlisted men should in no sense be that of a superior and inferior, nor that of master and servant, but rather that of teacher and scholar. In fact, it should partake of the nature of the relation between father and son, to the extent that officers, especially commanding officers, are responsible for the physical, mental and moral welfare as well as the discipline and military training of the young men under their command who are serving the nation in the Marine Corps."

"It must be kept in mind that the young American responds quickly and readily to the exhibition of qualities of leadership on the part of his officers. Some of these qualities are industry, energy, initiative, determination, enthusiasm, firmness, kindness, self control, unselfishness, honor and courage. Every officer should endeavor by all means in his power to make himself the possessor of these qualities and thereby to fit himself to be a real leader of men."

"If you will make these words your guide and your goal, you will find your life in the service not only successful but rewarding. But even more important you will be making a valuable contribution to the safety and betterment of our country."

The 1954 Wellcome Prize Essay

The Clinical Syndrome of Acute Renal Insufficiency*

By

CAPT. CHRISTOPHER C. SHAW, M.C., U. S. Navy**

INTRODUCTION

DURING the past decade various names have been employed to describe the syndrome of acute renal insufficiency. The phrase "lower nephron nephrosis" was popularized by Lucké¹ in 1946, but the condition is also referred to as the crush syndrome, traumatic anuria, acute urinary suppression, hemoglobinuric nephrosis, "kidney shutdown," and necrotizing nephrosis. Yet the term acute renal insufficiency or acute renal decompensation is more truly descriptive of the altered physiology.

Perhaps this "confusion of tongues" has obscured prompt recognition and accurate diagnosis of the syndrome, its rather common occurrence immediately following trauma and the vital importance of applied physiology as the only rational basis of therapy.

That failure to comprehend the clinical and pathologic significance of acute renal insufficiency may lead to a fatal outcome, is too well illustrated by one of several ill-fated cases observed by the author.

An 18-year-old boy was pinned beneath the rear wheels of his father's truck for 5 hours. He sustained fractures of two ribs in the right axilla and trauma of the brachial plexus with classical paralysis of the right arm. Although he remained conscious throughout this ordeal, he was found to be in moderate shock when released. He was given 4000 ml. of fluid as "supportive therapy." The following 24 hours his kidneys produced only 50 ml. of urine. Because of this extreme oliguria his local physician became alarmed and administered 6000 ml. of fluid intra-

venously. By the next day only 35 ml. of urine had been excreted. Panic reigned and the unfortunate patient received an additional 8000 ml. of intravenous fluid over the next 24-hour period. He promptly developed iatrogenic pulmonary edema from which he died on the fourth postaccident day. The tragic loss of many similar patients can be avoided by prompt recognition and proper management of acute renal insufficiency.

DEFINITION

Acute renal insufficiency denotes sudden failure of the kidneys to produce urine in adequate volume and concentration to prevent the retention of toxic metabolites. It is analogous to a shock-like syndrome manifested by sudden decompensation or failure of the renal functions.

The gravity of the clinical and biochemical problem will depend upon the severity of the injury or illness and the response of the individual thereto. In the majority of cases of acute renal failure, body trauma initiates complete but transient anuria. This is followed in a few hours by a period of one, two, or even three weeks of severe oliguria with only 30 to 300 ml. of urine each day. Progressive uremia rapidly develops due to retention of metabolic waste products. If the patient survives this hazardous period, the oliguric phase is replaced spontaneously by diuresis characterized by increase in the daily urine volume from 300 or 400 ml. to perhaps 3000 or 4000 ml. during the next week or two with gradual clearance of toxemia.

The clinical course will vary greatly from patient to patient and is constantly fraught with great danger not only during the phase of oliguria but also during the diuretic phase. Cardiovascular, gastrointestinal, and neuro-

* From the Metabolic Research Facility, United States Naval Hospital, Oakland, California.

** Present address: Philadelphia Naval Shipyard, U. S. Naval Base, Philadelphia 12, Pennsylvania.

muscular signs and symptoms may appear, heralding extremely dangerous complications. The outcome will be determined largely by the physician's understanding and knowledge of the pathologic changes, not only in the nephrons but also in the concomitant and extreme derangements of the basic physiology of vital bodily functions.

The phenomenon was first described from the pathologic viewpoint by Lucké¹ who reported 538 fatal cases thoroughly studied at the then Army Institute of Pathology (now the Armed Forces Institute of Pathology). A year later Beecher et al.² and Burnett et al.³ analyzed the renal and biochemical problems in 191 very seriously wounded patients received during the Italian campaign in World War II. Out of this group, 101 soldiers died in acute renal failure. From this and subsequent experiences it has become apparent that the importance of this syndrome in military medicine and traumatic surgery deserves special emphasis.

ETIOLOGY

Intelligent history-taking must be predicated on a thorough knowledge of the causes of acute renal insufficiency which fall into three major groups. In the first instance, the immediate renal insult follows from trauma of massive wounds and multiple fractures, severe head injury, profound hemorrhage from any source, severe anoxia, carbon monoxide poisoning, and extreme fluid loss, as in intestinal obstruction or severe diarrhea. In the second group, excretion of pigment is the most dramatic feature. This promptly appears following the crush syndrome, incompatible blood transfusion, blackwater fever, hemolysis secondary to transurethral prostatectomy employing distilled water, severe burns, heat stroke, icterus neonatorum, hemorrhagic fever and the hemoglobinurias in the crises of sickle cell anemia. The third group is characterized by nephrotoxic substances or sensitizing agents which directly attack the nephrons. This occurs in heavy metal poisoning from uranium, bismuth, mercury and phosphorus salts, or with toxic

organic compounds such as carbon tetrachloride, mushroom poisoning, black widow spider toxins and certain snake venoms. It is all too frequent an occurrence in eclampsia and has been reported in sulfonamide sensitivity and serum sickness, resulting from endotoxins of hemolytic staphylococci, meningococci and murine typhus, and also following excess administration of nephrotoxic antibiotics such as thiomycin, the bacitracins and the polymyxins.

These etiologic factors are of prime importance in establishing the diagnosis, which is not difficult when an accurate history establishes the fact that the urinary output of the patient has suddenly been reduced from a normal volume of 1000 or 1500 ml. to 50 or 250 ml. per day. If total anuria develops and persists for more than 24 hours, the probable cause is total obstruction of the urinary tract. This should be searched for diligently and if found, promptly eliminated.

PATHOLOGIC PHYSIOLOGY

Assuming the present illness is ushered in by an acute traumatic episode, glomerular filtration will cease when the systolic blood pressure in the peripheral arteries falls to 70 mm. of mercury or less. Even more important, systemic hypotension induces vasoconstriction of the renal vessels, and blood is shunted away from the kidneys to even more vital organs such as the brain and heart itself. Secondary to renal ischemia, hypoxia of the tubules rapidly develops, throwing an added burden on an already physiologically embarrassed kidney.

Largely due to the ischemia and hypoxia, degeneration of the nephrons promptly occurs and multiple areas of focal necrosis develop in the tubular epithelium.⁴ A variety of toxins and pigmented compounds are thus liberated by tissue destruction in the kidney parenchyma and inflammation and edema of the interstitial tissue appear. Total anuria may persist from 12 to 18 hours. It usually is transient and is followed by oliguria with urine volumes from 30 to 300 ml. of acid urine, specific gravity from 1.009 to 1.014,

with hematuria, proteinuria, granular and cellular casts. Pigment in the form of myoglobin or acid-hematin crystals may actually block the lumen of the tubules. Nitrogenous waste products from protein catabolism progressively accumulate in the blood and the patient rapidly becomes uremic. Values for blood urea nitrogen, nonprotein nitrogen, creatinine, phosphate and sulfate increase in the plasma. The serum sodium, chloride and carbon dioxide-combining power fall, and acidosis ensues. During the second week of oliguria the patient presents the classical picture of apathy, nausea, vomiting, somnolence, uremia and coma. Biochemical and clinical deterioration are rapid during the third week of oliguria and usually are terminal unless diuresis ensues.

If the patient is fortunate enough to survive this highly dangerous uremic episode, he then begins to pass over gradually and spontaneously from the oliguric period to the diuretic phase of the syndrome. This probably is directly related to regeneration of the tubular epithelium which begins from 4 to 7 days after the initial renal insult. Restoration of the damaged epithelium of the tubules proceeds for the next 2 to 4 weeks, and the urine volume increases accordingly. There is delayed but gradual reduction in the azotemia, the patient's sensorium slowly clears and his appetite returns. However, electrolyte equilibrium is not fully reestablished for 3 to 6 months after clinical recovery, and the total functions of the previously damaged kidney do not reach homeostatic equilibrium in many cases for probably a full year following acute renal insufficiency.

DIAGNOSIS

Prompt recognition of acute renal failure is mandatory if a fatal outcome is to be avoided by means of proper, conservative management during the very first few days or weeks of this alarming disorder. If the physician is alert to the probability of acute renal failure as a complication of traumatic events and overwhelming illness, the diagnosis is not particularly difficult. Many cases

of mild renal decompensation are undoubtedly overlooked and proceed to full recovery either without benefit of or in spite of clinical intervention. Nevertheless, if the necrotic lesions of the renal tubules are sufficient in number and extent so that widespread degeneration of nephrons develops, acute renal decompensation becomes very serious and extremely difficult to manage, and too often terminates fatally.

DIFFERENTIAL DIAGNOSIS

The diagnostician should be cognizant of the mild transient oligurias and azotemias which may accompany various combinations of dehydration, depletion of electrolytes, metabolic acidosis and metabolic alkalosis. These derangements will usually disappear promptly with adequate hydration of the patient. If trauma is sustained *without* development of the shock syndrome, reflex anuria or transient oliguria may be present for several hours, is usually self-limiting and neither precipitates nor indicates acute renal insufficiency.⁶ Bloody oliguria may be prominent also in renal vascular accidents, acute glomerulonephritis, extensive pyelonephritis, and in progressive exacerbations of chronic kidney failure. Bilateral ureteral calculi may cause sudden and total anuria, which also could result from obstruction of a single ureter if only one kidney is present. Overwhelming sulfonamide crystalluria may cause bilateral ureteral obstruction. Metastatic carcinoma within the pelvis may block both ureteral orifices and induce total anuria.

Other causes of extreme oliguria include rapidly advancing hypertensive cardiovascular disease associated with nephrosclerosis and bilateral occlusion of the renal arteries as by emboli, thrombi or dissecting aneurysms. Bilateral cortical necrosis of the kidneys can and does occur in overwhelming septicemia and as a complication of the toxemia of pregnancy. In both conditions the urine is bloody and very scanty. Such possibilities should be borne in mind and ruled out. The chief asset in the differential diagnosis of sudden oliguria is an *accurate history of the*

present illness, usually prolonged or profound shock following trauma.

THERAPEUTIC MANAGEMENT

The management of the patient with acute renal insufficiency is always difficult and at times discouraging. Overhydration, pulmonary edema, uremia and potassium intoxication of the heart, in the order given, are the most prevalent causes of death.

Clinical control during both the oliguric and diuretic phases must be directed and adjusted in terms of altered body metabolism, which will continue apace whether or not the patient receives any nourishment and will place certain basic demands on the extensively embarrassed kidneys.⁶ Endogenous stores of carbohydrate and fat will be metabolized first to "spare" endogenous protein. The fat and carbohydrate eventually will be oxidized to carbon dioxide and water and as such excreted by the lungs and through the skin in the form of an "insensible water loss" of 750 to 800 ml. per day. Protein, whether endogenous or exogenous, will be broken down to urea, organic acids, osmotically potent electrolytes and molecularly-contained water. These catabolites require excretion by the kidneys.

In order to diminish the excretory load, it is mandatory to restrict fluid intake to basic levels during the oliguric phase. The "basic level" of fluid intake is calculated every 12 or 24 hours for each individual as follows: the insensible water loss (750 ml. per day) plus the collected volume of urine, stool, and vomitus. The total daily fluid intake, whether by mouth or parenterally, must never exceed this calculated basic level during oliguria. An accurate intake and output chart is, therefore, the *sine qua non* of therapy in acute renal decompensation. An indwelling catheter is mandatory for exact measurement of urinary flow.

To prevent starvation ketosis 100 gm. of glucose intravenously constitute a daily caloric minimum. The fluid of choice is either 10 or 20% dextrose in distilled water for injection. Do not use physiologic salt solution ("normal saline") for fear of inducing

hypernatremia and edema. The advantage of butterfat soup by gastric tube or a fat emulsion intravenously is conjectural. Protein in any form, especially by oral feeding or as intravenous amino acids, cannot be too strongly interdicted.

Diuretic agents are mentioned only to be condemned. Their administration during oliguria and complete anuria is equivalent to whipping a tired, injured and broken horse.

Clinical management during the syndrome of acute renal failure must be adjusted to each individual patient and it must not be overdone. The clinician should satisfy himself that he is meeting insofar as possible the basic fluid requirements of his patient in the oliguric phase and he must then have the courage to stand by his convictions and "sit on his hands." He must never yield to outside pressure for energetic therapy from his colleagues or from the patient's family. More patients are killed by over-treatment than by the syndrome of acute renal insufficiency.⁷

During the diuretic phase the battle is far from won. Computation of daily fluid intake must be adjusted for excessive volumes of urine. Urinary output, now in liters, should be added to the basic allowance for insensible loss of water (750 ml.) plus the volume lost as vomitus or gastric suction and stool. If the daily fluid requirement is underestimated, dehydration will become apparent; if overestimated, pulmonary edema or anasarca may develop in a few hours. Moreover, electrolyte balance requires careful daily attention because large volumes of urine may "wash out" sodium, potassium and chloride from the body. Occasionally, during the diuretic phase it is necessary to add salt and potassium to the fluid allowance to prevent hyponatremia, hypokalemia and hypochloremia. Rarely, patients may become *hypernatremic* and die from sodium intoxication, apparently from reabsorption of too much cation by healing but overcompensating nephrons.

Nutrition during diuresis is a touchy problem and must be approached cautiously. Appropriate biochemical studies every other day are highly recommended during early renal recovery. If vomiting has ceased, oral feed-

ing of a soft, bland diet rich in carbohydrate, fat and vitamins is then desirable. Small quantities of protein (20-30 gm.) may gradually be added to the diet. Weight loss during diuresis is usually rapid and often extreme. Convalescence is prolonged due to excessive tissue catabolism. Complete recovery may require many months.

COMPLICATIONS

Pulmonary congestion is all too common and always an ominous complication. It often appears in the absence of hypertension and it may develop after only a few days of oliguria, even though the administration of salt and water are not excessive. Although peripheral edema may be absent, relatively small amounts of blood or of salt solution may precipitate pulmonary edema. Attempts to correct hyponatremia, hypochloremia and acidosis may initiate cardiac failure. Unfortunately, digitalis does not always produce a favorable cardiac response in the oliguric phase of acute renal decompensation.

Vomiting may begin with the onset of oliguria but more frequently appears toward the end of the first week of the oliguric phase. During this period oral feeding should be avoided because it will only aggravate the vomiting which, in turn, may precipitate metabolic alkalosis. Abdominal distention is distressing and moderately uncomfortable. Associated with coughing or emesis it may induce dehiscence of surgical wounds which heal poorly during acute renal failure because of hypoproteinemia. Diarrhea does not develop, if at all, until late in the oliguric phase. It may be both persistent and profuse. This is a distressing complication chiefly because it represents losses of fluid and electrolytes which are difficult to measure and thus interferes with the already complicated management of the patient. Usually, the diarrhea gradually subsides as the renal function improves. Hematemesis is rare in acute renal decompensation, but melena is a frequent and serious complication of uremia.

The anemia associated with acute renal failure is self-limiting. The hematocrit may fall to extremely low levels (19 or 20 PCV)

but it will not respond to the transfusion of blood (except temporarily) and it will clear up slowly and spontaneously beginning with the diuretic phase. Blood transfusions, therefore, should never be employed during the oliguric and early diuretic phases, in spite of an alarming anemia, because of the danger of precipitating pulmonary edema. Even a small quantity of blood by transfusion may tip the scales at this stage of the syndrome and guarantee a fatal outcome.

The low carbon dioxide-combining power of the blood during oliguria represents a metabolic acidosis. This is due to failure of excretion or metabolism of organic and inorganic ions, rather than from loss of base. Acidosis varies markedly and quite inexplicably from patient to patient. Azotemia results from inability of the decompensated kidney to excrete urea, creatinine, uric acid and other nitrogenous metabolites. It serves as an index of the extent of the uremia which of itself may be fatal, either in the late oliguric or early diuretic phases, since uremia does not reach its meridian until 5 or 6 or even 7 days after the onset of diuresis.

Marked delirium and convulsions usually are secondary to excessive administration of water and sodium and are therefore avoidable. Somnolence and stupor are distressing, especially in elderly patients, but they usually clear spontaneously during the diuretic phase of the disease. Muscular wasting is profound and becomes very prominent during diuresis. It is thought to manifest a catabolic reaction to the initial trauma sustained by the patient. Progressive muscular weakness, hyperreflexia and areflexia are indicative of potassium intoxication, which must be avoided at all costs in the management of acute renal decompensation.

Because potassium in excess is the most dangerous electrolyte, the syndrome of potassium intoxication deserves special emphasis.⁸ It may be caused by oral administration of too much exogenous potassium (as in fruit juice), by rapid liberation of endogenous potassium from excessive tissue catabolism, as the result of extensive muscle trauma, or by intravascular hemolysis (as in transfusion of

incompatible blood) and by failure to maintain electrolyte equilibrium. Clinically, the syndrome may be recognized in the near-terminal stage by muscle paresis, rapidly progressing to paralysis, associated with extreme exhaustion and accompanied by abnormalities of cardiac conduction. This may be ascertained by determinations of serum potassium revealing rapid rise toward lethal levels of 9 or 10 mEq./L. (normal: 4 to 5 mEq./L.) and/or by means of the electrocardiogram.

Compared to the T waves of a control tracing taken prior to potassium intoxication, electrocardiographic changes include tenting of the T waves, depression of the RS-T segments, prolonged P-R interval, and widening of the QRS complexes. Absence of P waves denotes sinus arrest. Fusion of the QRS and RS-T segments to form a "sine-wave" ventricular complex is pathognomonic of imminent death from potassium intoxication. At this period the prognosis is extremely poor. Unless detected early and treated vigorously, hyperkalemia may suddenly precipitate ventricular fibrillation or fatal cardiac standstill.

If hyperkalemia threatens (and all too frequently it does), one may employ glucose infusions containing insulin (one unit for each two or three grams of glucose). Very slow, continuous infusions of glucose decrease the plasma concentration of potassium and to some extent thereby temporarily reduce the danger of cardiac conduction intoxication. Since the sodium ion is antagonistic to potassium, in extreme emergencies where death from potassium intoxication is imminent, 3% sodium chloride solution intravenously may be used sparingly to ward off a fatal outcome until such time as the patient can be dialyzed on an "artificial kidney." However, this procedure should be attempted only by a trained team, preferably at a University Hospital or large, clinical teaching center.

Other "substitution measures" which can be resorted to in the event an artificial kidney apparatus is not available, include peritoneal

irrigation, gastrointestinal lavage, exchange transfusions⁹ and the use of ion-exchange resins. Each method has certain advantages and inherent hazards; none is entirely satisfactory.

Extracorporeal dialysis is a difficult and hazardous undertaking and should not be recommended lightly.¹⁰⁻¹⁶ It is justified only after a reasonable period (7 to 14 days) of conservative management and then only as an emergency measure when extreme uremia or fulminating potassium intoxication jeopardizes the life of the patient. During the past year 11 patients were dialyzed by the author on an artificial kidney at the United States Naval Hospital, Oakland, California. Seven recovered; four died: two from chronic renal disease, two from nonrenal causes. Had dialysis not been recommended, all 11 patients presumably would have died. The Medical Department of the United States Army has had a much broader experience with the artificial kidney at the Walter Reed Army Medical Center in Washington, D.C., the Brooke Army Hospital at Fort Sam Houston and in the field in Korea.¹⁷ Their results are under study and appraisal at the present time. The success of extracorporeal dialysis (60 to 65% in reported series) will depend largely on how well (and conservatively) the clinician has managed the patient during the first 10 days or two weeks of acute renal insufficiency.

SUMMARY

Acute renal insufficiency is a clinical syndrome of great complexity, often referred to as "lower nephron nephrosis." It requires the combined, coordinated effort of the diagnostician, the clinician, the physiologist, the biochemist and, at times, the surgeon. Its recognition is not difficult if there is a clear-cut history of immediate antecedent trauma. The syndrome is characterized by sudden onset of oliguria (urine volumes from 30 to 350 ml. per day) resulting in progressive uremia associated with biochemical and clinical deterioration. The complications are numerous and vary from patient to patient.

Pulmonary edema, uremic coma, potassium intoxication and fulminating infections (usually introduced at time of the original trauma) are the most common causes of death.

Treatment is difficult and hazardous. It must be predicated on an understanding of the pathologic changes which alter the physiology of the renal tubule or lower nephron.

The basic principle of treatment during oliguria is the avoidance of overhydration (with blood or salt solution) which induces pulmonary edema. More patients are killed than cured by too energetic or overzealous therapy.

Fluid intake must be calculated *accurately* every 12 or 24 hours based upon the sum of fluid output (urine, stool and vomitus) *plus* a daily allowance of 750 ml. to cover the "insensible loss" of water in the form of perspiration and as water-vapor through the lungs. Ten or twenty percent Dextrose in distilled water for injection is the fluid of choice. This should provide 100 gm. of carbohydrate daily to prevent starvation ketosis.

Diuresis usually begins spontaneously from the 7th to the 12th day. Fluid volumes must now be calculated to allow for the greatly increased urine output, amounting to 3000 or 5000 ml. daily. Overestimation may precipitate pulmonary edema; underestimation will result in dehydration. As soon as vomiting ceases the patient may be given nourishment by mouth in the form of carbohydrate and fat. A butterfat soup will provide high caloric content and is usually, well tolerated in the late diuretic phase. Small amounts of protein (20 to 30 gm.) may then be added gradually to the diet.

In the event diuresis fails to appear by the 10th to the 12th day, the danger of death from uremia or by potassium intoxication is very real. Emergency measures become imperative. They include peritoneal irrigation, gastrointestinal lavage, administration of ion-exchange resins, exchange transfusions or, preferably, extracorporeal dialysis by means of an artificial kidney. Approximately two-thirds of selected patients sub-

jected to hemodialysis can be "saved" by this procedure (artificial kidney).

Blood transfusions are treacherous in the oliguric and early diuretic phases of the syndromes and, if employed, must be given sparingly because of the danger of precipitating pulmonary edema. Diuretic agents can not be too strongly condemned at any time during treatment of the syndrome.

Conservative management—persistent and prolonged—is the preferable form of therapy (70% successful) in lower nephron nephrosis. Hemodialysis by means of an artificial kidney may be mandatory and often is life-saving in acute potassium intoxication and/or fulminating uremia. Yet, it is not an elective procedure comparable to definitive surgery. It should be reserved for true emergencies, which can be avoided in the main by early and accurate diagnosis of acute renal insufficiency and adequate but cautious therapy of this syndrome.

REFERENCES

- ¹ Lucké, B. "Lower Nephron Nephrosis. The Renal Lesions of the Crush Syndrome, of Burns, Transfusions, and Other Conditions Affecting the Lower Segments of the Nephrons." *Mil. Surgeon* 99, 371-396, Nov. 1946.
- ² Beecher, H. K., Simeone, F. A., Burnett, C. H., Shapiro, S. L., Sullivan, E. R. and Mallory, T. B. "The Internal State of the Severely Wounded Man on Entry to the Most Forward Hospital." *Surgery* 22, 672-712, Oct. 1947.
- ³ Burnett, C. H., Shapiro, S. L., Simeone, F. A., Beecher, H. K., Mallory, T. B. and Sullivan, E. R. "Renal Function Studies in the Wounded." *Surgery* 22, 856-873, Nov. 1947; "Post-Traumatic Renal Insufficiency." *Surgery* 22, 994-1028, Dec. 1947.
- ⁴ Doolan, P. D. "Acute Renal Insufficiency." *U. S. Armed Forces Med. J.* 3, 1751-1766, Dec. 1952.
- ⁵ Moore, C. A. and Dodson, C. C. "Reflex Anuria. Report of a Case." *U. S. Armed Forces Med. J.* 5, 549-551, Apr. 1954.
- ⁶ Schreiner, G. E. "The Treatment of Acute Renal Insufficiency." *Medical Annals of the District of Columbia* 22, 531-535, Oct. 1953.
- ⁷ Swann, R. C. and Merrill, J. P. "The Clinical Course of Acute Renal Failure." *Medicine* 32, 215-292, May 1953.
- ⁸ Merrill, J. P., Levine, H. D., Summerville, W. and Smith, S. "Clinical Recognition and Treatment of Acute Potassium Intoxication." *Ann. Int. Med.* 33, 797-830, Oct. 1950.

* Goldbloom, R. B. "Renal Failure with Extreme Hyperpotassemia: Its Treatment with Exchange Transfusions." *New England J. Med.* 250, 717-721, Apr. 29, 1954.

¹⁰ Murray, G., Delorme, E. and Thomas, N. "Artificial Kidney." *J.A.M.A.* 137, 1596-1599, Aug. 28 1948.

¹¹ Fishman, A. P., Kroop, I. G. and Leiter, H. E. "Experiences with Kolff Artificial Kidney." *Am. J. Med.* 7, 15-34, July 1949.

¹² Merrill, J. P., Thorn, G. W., Walter, C. W., Callahan, E. J. and Smith, L. H., Jr. "Use of Artificial Kidney, Technic." *J. Clin. Investigation* 29, 412-424, Apr. 1950.

¹³ Merrill, J. P. "Present Role of the Artificial

Kidney in Clinical Therapy." *Ann. Int. Med.* 33, 100-107, July 1950.

¹⁴ Merrill, J. P. "The Artificial Kidney." *New England J. Med.* 246, 17, Jan. 3, 1952.

¹⁵ Snapper, I. "On Extra Corporeal Dialysis of Blood in Acute Anuria." *Bull. New York Acad. Med.* 28, 621-629, Oct. 1952.

¹⁶ Teschan, P. E. and McDowell, M. "The Artificial Kidney." *U. S. Armed Forces Med. J.* 3, 391-400, Mar. 1952.

¹⁷ Meroney, W. H. "Activities Report of the Renal Insufficiency Center, Wonju, Korea for the Period 25 February to 6 August 1953." *Surgical Research Team, Army Medical Service Graduate School, Walter Reed Army Medical Center, Washington, D.C., December 1953.*

Performance and Recovery Pulse Rate Studies in the Norwegian Army

By

K. LANGE ANDERSEN, M.D.*

(With one illustration)

INTRODUCTION

THE military authorities in Norway asked for more complete knowledge about the physical fitness of the men entering the army, and more than given by the usual medical examination. The reason this request was made was pointed out in an earlier paper.¹ Such knowledge can be acquired by using functional tests, which determine important aspects of the ability of healthy men to do heavy muscular work. As is well known, this ability depends on the functional capacity of many organs and their related systems. Psychological factors also play a considerable role. Consequently, it is not easy to set up a battery of tests both valid and reliable. It is questionable if it will ever be possible to measure all aspects of physical fitness, even if one uses a very large number of tests.

With few exceptions the methods used in clinical medicine have not proved useful in this connection. Physical educators have long

used, however, a variety of performance tests as measures of important aspects of physical fitness.^{2,3} These tests purport to measure neuromuscular functions but many of the recommended procedures (e.g., the mile run or 100 yard dash) do not measure specific organ functions, but rather reflect the functional capacity of a variety of organs. Of particular importance is the state of mind of those tested for if the subjects do not cooperate the results are useless. From a clinical point of view one may also mention that some performance tests (e.g., the mile run) may represent a danger to the health of the subjects untrained for that specific task.

On the other hand, most of the performance tests are simple to use and do not necessarily require skilled testers to the same extent as many refined physiological methods. The results of the tests are also comparatively easy to interpret. If supervised and performed diligently these tests are undoubtedly valuable in assessing functional capacity for muscular work.

The functional capacity of the cardio-

* Medical Reserve officer attached to the staff of the Chief Surgeon of the Norwegian Army. Oslo, Norway.

vascular system is considered to be of major importance in determining physical fitness. The best over all measure of this function is considered to be the oxygen intake during maximal aerobic work.^{4, 5, 6} The technique for this determination is time consuming, and requires a well equipped laboratory with trained personnel. The *recovery pulse rate*, after a maximal or a submaximal standardized exercise has been widely used, and has provided useful information about cardiac function of healthy people.⁷

METHODS USED FOR STUDYING PHYSICAL FITNESS IN THE NORWEGIAN ARMY

In accordance with the view previously summarized, the author felt that seven selected performance tests, plus a simple step test, were the most practical and readily applicable tests for field studies about the physical fitness of military personnel.

Although considerable work has been done in the area of performance tests, it is not entirely clear what type of performance is important and fundamental. Cureton⁸ has derived six factors which he considers basic, namely: flexibility, balance, strength, power, agility and endurance. While these factors seem logically sound, the technique of measurement still poses a problem.

The following tests were chosen on the basis of logic as satisfactory methods for determining the most significant aspects of performance as related to military service.

Performance tests

Flexibility—measured by trunk flexion.²

Speed—measured by 100 m. dash.

Agility—measured by Illinois agility run.²

Strength—measured by dynamometer.

The sum of right and left grip and leg and back life were used.² (Total strength)

Endurance—measured by 1500 m. run and chinning.

Power—measured by standing broad jump.

Cardio-vascular test

A 5 minute step-test was used. This con-

sists of counting the pulse for 30 seconds after 1 minute sitting rest. This pulse rate times two is later called *recovery pulse rate*. The height of the bench used was 40 cm. (16 inches), 30 steps up and down per minute.¹¹

THE PHYSICAL FITNESS OF MEN ENTERING THE NORWEGIAN ARMY

The physical fitness of the men who passed the induction medical examination was measured using the methods previously described. See Table I, II and Fig. 1. The tests were given before the men started any physical training program. All data were collected following a standardized procedure.^{9, 10} The men tested did not constitute a strict random sample, but they were regarded as representative of a cross-section of men entering the army in Norway.

Table III shows recovery pulse rate after three months of training.

Recovery Pulse Rate in Older Men

Tables IV, V and VI show the recovery pulse rate of older men, ranging in age from 20 to 40 years. It was not considered entirely safe to put those men, most of them untrained, on the performance tests before they had undergone a physical training program. Consequently, only the step-test was administered to these men. Table IV shows the recovery pulse rate in relation to age. The

TABLE I
PERFORMANCE TESTS SCORES OF NORWEGIAN ARMY MEN, AGE 19-21 YEARS
(Before any physical training was started)

Test	Number	Mean	Standard deviation
Trunk flexion	264	28.3 cm	8.9 cm
100 m. dash	514	14.4 sec	0.8 sec
Total strength	66	473.0 kg.	70.0 kg.
Standing broad jump	526	236.0 cm.	28.0 cm.
Illinois agility run	256	18.4 sec.	1.0 sec.
1500 m. run	240	341.0 sec.	19.0 sec.
Chinning	266	7.2 times	3.5 times

TABLE II

THE DISTRIBUTION OF RECOVERY PULSE RATE (5 MIN. STEP TEST) IN NORWEGIAN ARMY MEN, AGE 19-21 YEARS
(Distribution was approximately normal. Figures are those before physical training.)

The recovery Pulse Rate	Number
70-79	6
80-89	12
90-99	34
100-109	53
110-119	56
120-129	53
130-139	26
140-149	7
150-159	1
160-169	1
Total	240
Mean	113
St. dev.	16

recovery pulse rate significantly diminishes with decreasing age. This is interpreted as meaning decreasing cardio-vascular condition with increasing age.

RECOVERY PULSE RATE IN RELATION TO OCCUPATION AND ACTIVITY BACKGROUND

Table V shows the recovery pulse rate of men according to previous occupation. Those men engaged in farming and forestry had the lowest average recovery pulse rate, indicative of better cardio-vascular condition. Business men averaged highest in recovery

TABLE IV

THE RECOVERY PULSE RATE OF OLDER MEN, RANGING IN AGE FROM 20 TO 40 YEARS, WHEN ENTERING THE ARMY

Age in years	Number	Mean	Standard deviation
20-24	694	125	16.1
25-29	763	128	16.3
30-34	287	130	17.1
35-39	226	131	14.6

TABLE V

THE RECOVERY PULSE RATE IN RELATION TO PROFESSION

Profession	Number	Mean	Standard deviation
Farming and forestry	146	121	11.8
Building	32	123	20.2
Transport	62	124	17.7
Industry	279	129	15.9
Business and office work	308	130	15.4

pulse rate, indicating the poorest cardio-vascular condition.

Table VI shows the average recovery pulse rate in the various groups of men according to their different physical recreational backgrounds. The sedentary group had the highest average recovery pulse rate, indicating the poorest cardio-vascular condition.

TABLE III

THE RECOVERY PULSE RATE AFTER THREE MONTHS OF MILITARY TRAINING (Effects of training are clearly reflected)

Training	Military Units	Number	Mean	Standard deviation
Hard physical training	Infantry:			
	Company A	97	103	15.0
	Company B	88	96	13.4
	Company C	88	100	14.7
Moderate physical training	Transport—Company	49	110	13.6
No physical training	Signal Unit	21	116	18.0

Figure 1

Distribution (%) of Performance tests scores of
Norwegian Army men, age 19-21

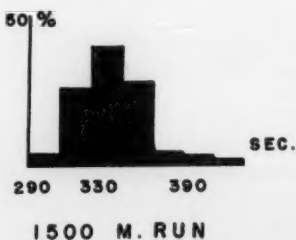
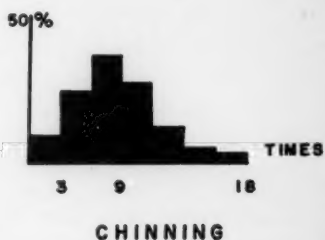
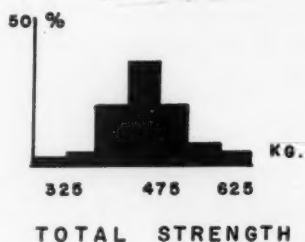
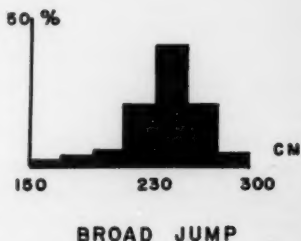
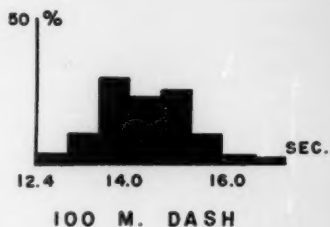
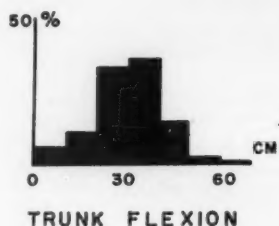


TABLE VI
RECOVERY PULSE RATE IN RELATION TO PREVIOUS
PHYSICAL RECREATIONAL BACKGROUND

Physical activity habits	Number	Mean	Standard deviation
Sedentary	306	132	14.1
Moderate activity	1196	129	16.2
Extensive activity	475	122	16.6

COMMENT

The results of this study raise many questions. What optimal level of physical fitness does army service demand? What training program will bring this level about?

The answer to these questions will be found only after intensive studies on the scientific basis of human performance. In these days of compulsory military service, with a steady flow of young men in and out of the armed forces, it seems important that the military authorities should accept the responsibility of sponsoring studies which help to solve the problems outlined.

It is known that training may have deleterious as well as desirable effects. It is clear that any military training program

should be based on the scientific evidence available, and in this connection the cooperation of military authorities, medicine and physical education will be a significant factor.

REFERENCES

- ¹ Andersen, K. Lange. *Physical Testing of Personnel in the Norwegian Army*. Sports Medicine. Helsinki, 1952.
- ² Cureton, T. K. *Physical Fitness, Appraisal and Guidance*. St. Louis, The Mosby Company, 1947.
- ³ Larson, L. *Measurement and Evaluation in Physical Education, Health and Recreation*. C. V. Mosby Company, St. Louis, 1951.
- ⁴ Wiggers, C. L. *Physiology in Health and Disease*. Lea and Febiger, Philadelphia, 1949.
- ⁵ Astrand, P. O. *Experimental Studies of Physical Working Capacity in Relation to Sex and Age*. Koenhavn. Ejnar Munksgaard 171 p. 1952.
- ⁶ Karpowich, P. V. *Physiology of Muscular Activity*. W. B. Saunders Company, Philadelphia, 1953.
- ⁷ Johnson, R. E., Brouha, L., and Darling, R. C. A Test of Physical Fitness for Strenuous Exertion. *Rev. Canad. de Biol.* 1942, 1:491.
- ⁸ Cureton, T. K. *Physical Fitness Workbook*. The Mosby Company, St. Louis, 1947.
- ⁹ Andersen, K. Lange. *Fysisk testing av militær personell*. Haerens Overkommando, Oslo, 1952.
- ¹⁰ Andersen, K. Lange, and Holten, O. Unpublished report to the Commander of the Norwegian Army, 1953.
- ¹¹ Bergman, B. Unpublished reports to the Commander of the Swedish Army, 1950.



There is no road to universal security or universal peace except the hard road of work, toil and readiness to fight.—JAMES FORRESTAL, Undersecretary of State

Suggested Systems for the Uniform Illumination of Visual Acuity Test Charts*

By
CAPTAIN LAWRENCE T. ODLAND, USAF (MC)

AND

LOUISE L. SLOAN, PH.D.

*Associate Professor of Physiological Optics, Johns Hopkins University,
Baltimore, Maryland*

(With two illustrations and two charts)

INTRODUCTION

FOR several years the Armed Forces-NRC Vision Committee has been interested in the problem of standardizing the measurement of visual acuity in the military services. The urgent need for better control of the illumination of test charts is demonstrated by Farnsworth's findings in 1945¹ that in different Naval installations the illumination varied from 8 to 300 ft-c. A similar wide range was found in a survey² of the testing equipment of 30 civilian ophthalmologists.

As a first step toward improvement in existing conditions, the Vision Committee, in 1947, published a Manual of Instructions for Testing Visual Acuity.³ This manual gives detailed specifications for the installation of overhead lights and for the painting of surrounding areas. These were designed to produce a luminance of the white background of the test chart of 10-15 ft-L† and a luminance of the surrounding areas of not less than 3 ft-L.

The second step was to formulate detailed specifications for the test charts themselves. The various stages in the development of these charts are described in detail in the Minutes of the Meetings of the Vision Committee. Because of their special features they are larger than the usual Snellen chart. The relatively large area (22.4×23.6 in.) is not

a disadvantage when the illuminating system recommended by the committee is also used. As a matter of fact, it was considered by them to be a desirable feature, because it automatically insured that the charts would not be used in any of the commercially available lighting cabinets. These were considered objectionable because of non-uniform illumination of the test chart and because of the almost complete lack of illumination of the surrounding areas.

PURPOSE OF INVESTIGATION

The purpose of the present study is to devise methods for illuminating charts of large areas, and to compare the adequacy of these methods with the illuminating system recommended by the Vision Committee, and with other methods, including a representative sample of commercially available direct lighting cabinets. In the comparative evaluation the following aspects are considered: (a) level and uniformity of illumination of the test chart and level of illumination of its immediate surroundings; (b) variation in light output with line voltage and with ageing of the light source; (c) simplicity, portability, cost and other pertinent factors.

REQUIREMENTS TO BE MET IN THE ILLUMINATION OF ACUITY CHARTS

With a given contrast between the black test characters and the white background, acuity increases with an increase in the luminance of the background. The luminance depends upon (a) the incident illumination and (b) the reflectance of the background. For the measurement of visual acuity a lumi-

*From the Wilmer Ophthalmological Institute of the Johns Hopkins University and Hospital.

†The foot-lambert, a unit of luminance, is equal to the incident illumination in foot-candles, times the reflectance of the surface.

nance in the neighborhood of 12 ft-L was recommended by the Vision Committee. This level approximates the average luminance of reading matter in ordinary indoor illumination, and is not so high that an impairment of acuity because of an uncorrected error of refraction will be hidden by the miosis associated with high levels of luminance.

It has been established in several investigations that acuity (decimal notation) is proportional to the logarithm of the luminance. From Lythgoe's data⁴ it may be shown, for example, that a two-fold increase in luminance increases acuity by about 0.15. The successive lines on commonly used acuity charts increased by intervals of decimal acuity varying from about 0.1 to 0.2. For example, the difference between 20/30 and 20/25 (0.67 and 0.8) is 0.13; between 20/25 and 20/20 it is 0.2. A two-fold increase in luminance (1:2 ratio) may therefore be expected to improve acuity by about one line on the typical charts. If 12 ft-L is adopted as a standard for the rating of visual acuity, to insure reproducibility of results, this standard should be maintained at least within the limits of 8-16 ft-L.

The principal factors responsible for variation in luminance are (a) fluctuation in output of the light sources with change in voltage, (b) decrease in output with hours of operation, (c) non-uniformity in the illumination of different areas of the test chart, (d) variations in the reflectance of the white background. With proper procurement standards and provisions for replacement of soiled charts, the reflectance should not vary significantly from 0.80. A certain amount of variation in light output with fluctuations in line voltage and with ageing of the light source cannot be avoided. The remaining variable, non-uniformity of illumination in different areas of the test chart, must be controlled by proper design of the lighting system. In view of the other sources of variation the highest illumination should probably not exceed the lowest by more than about 50% (ratio, 1:1.5). Under average conditions of line voltage and age of the light source,

therefore, the illumination on all areas of the test chart should be within 12-18 ft-c. On a surface of 0.80 reflectance this will give luminances within the 10 to 15 ft-L, the range recommended by the Vision Committee.

Provided that all light sources in the field of view are properly shielded, the surroundings will normally be darker than the test chart. Under these conditions accurate control of the luminance of the surrounding areas is not required to obtain reproducible measures of acuity. The data given in Table V of Lythgoe's paper show that when the luminance of the chart was 12.6 ft-L a decrease in luminance of the entire surroundings from 12.6 to 0.29 ft-L produced only a 2% decrease in acuity. The results of a study made in this laboratory by Altman and Rowland⁵ likewise showed no significant difference in acuities measured in a well-lighted room and in an instrument in which the areas surrounding the test chart received no light.

EXPERIMENTAL INVESTIGATION

The equipment investigated in this study includes (a) two different experimental systems developed as part of the study, (b) an eye-lane equipped with lighting units as specified in the Manual of Instructions for Testing Visual Acuity, (c) two representative commercial lighting cabinets, and (d) the Armed Forces Machine Vision Tester.

A. Illumination of Test Chart and Surrounding Areas. A Weston Illumination Meter, equipped with a Viscor filter was

TABLE I
VARIATION IN OUTPUT OF DIFFERENT LIGHT
SOURCES WITH VARIATION IN VOLTAGE

Light Source	Percent Output at Voltage Indicated		
	110	115	120
20 watt "Daylight" Fluorescent	95.6	100	106.0
300 watt incandescent, frosted	85.7	100	114.0
200 watt incandescent, frosted	84.5	100	115.0
25 watt "Lumiline," frosted	81.5	100	118.4



FIG. 1. Photograph of fluorescent lighting unit taken without supplementary illumination.



FIG. 2. Photograph of fluorescent lighting unit showing details of supporting framework.

used to measure illumination. Check readings were also made with a Macbeth Illuminometer. In both incandescent and fluorescent light the Weston Meter gave readings about 5-6% higher than the Macbeth instrument. It was assumed that the latter gave the more correct values, and the Weston readings were therefore corrected to agree with those of the Macbeth Illuminometer.

1. Lighting Unit Equipped with Fluorescent Tubes. Photographs of this equipment are shown in Figures 1 and 2. The reader should be reminded that the test chart shown in the photographs serves only to demonstrate the over-all size of the test field, and is not the final chart recommended by the Vision Committee. The light sources are two 33 in., 25 watt General Electric "Daylight" Fluorescent tubes. By the use of tubes of sufficient length to extend $4\frac{1}{2}$ in. above and below the test chart, decrease in illumination of the chart with blackening of the ends of the tubes is minimized.

The fluorescent bulbs are mounted in V-shaped metal shields supported by aluminum angle strips which are in turn fastened to a plywood frame upon which the test chart is mounted. The interior surfaces of the metal shields are painted a dull black. The light

incident upon the test field is therefore practically independent of any reflector. The outer surfaces of the metal shields, the supporting aluminum strips, and the plywood backing for the test chart are painted a light grey (reflectance of about 0.50). The light fixtures can be folded inward toward the chart to form a compact portable unit. For crating and shipment the unit can be easily disassembled.

The fluorescent tubes are $17\frac{1}{4}$ in. from the test chart. This distance was found to give the least variation in illumination over the area of the chart. The open portion of the metal shield is $4\frac{1}{2}$ in. in width and of the same length as the bulb. The vertical edges of the shield are bent inward at an acute angle to form a holder for a strip of translucent white Plexiglas. A $\frac{1}{8}$ in. thickness of #2018-1500 Plexiglas was found to give the desired level of light transmission.*

* Manufactured by Rohm & Haas Co., Washington Square, Philadelphia 5, Pa. Translucent white Plexiglas is available in many different densities and thickness; therefore other levels of illumination could easily be obtained by the use of the same material with a higher or lower transmission of light.

Figure 3 shows the illumination in foot-candles, of different areas of the chart and its surroundings. Within the area representing the test chart the numbers are located where the measurements were taken. The measurements of illumination in the surrounding areas were made at 1 foot from the adjacent border of the chart. For these measurements the line voltage was maintained at 115 volts AC by means of a variac.

2. Light Source on Portable Floor Stand. Investigations were made of the possibility of obtaining uniform illumination of the proper intensity from a single portable fixture located at some distance from the chart. For example, a 300 watt frosted incandescent bulb in a reflector may be placed just to one side of the test chart, at a distance of $6\frac{1}{2}$ ft. and approximately at the same height as the chart. For this location of the light source, the illumination incident on the chart is about 13 ft-c and varies by less than ± 1 ft-c in different areas. A variation of ± 6 in. in the distance of the unit produces no significant change in illumination. To insure its location at the correct distance from the chart, a cord of the proper length should be attached to the fixture.

About the same general level of illumina-

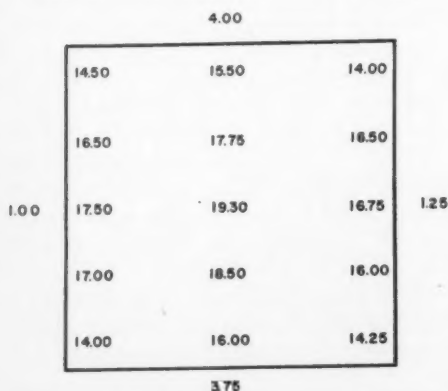


FIG. 3. Illumination on test chart and surroundings. Within area representing the test chart the numbers, indicating foot-candles, are located where measurements were made. In surrounding areas measurements were made at 1 ft. from the adjacent border of the chart.

tion can be obtained from two 24 in. 20 watt "Daylight" Fluorescent Tubes mounted vertically in a single reflector, at a distance of 45 in. from the chart. Because of the shorter distance the illumination is not as uniform and varies from 12.5 to 18.5 ft-c in different areas. With either of these lighting units the illumination of the surrounding areas is only slightly lower than that of the test chart itself.

3. Illuminating System Recommended by the Armed Forces-NRC Vision Committee. This method employs three 200 watt incandescent lamps, one behind the examinee, one at the center of the eye lane and one near the test chart. Each light source is suspended from the ceiling and is properly shielded. The special importance of accurate location of the lamp nearest the test chart is demonstrated by the instructions for its installation which read as follows: "One lamp should be exactly 5 feet diagonally from the 20/20 line of the chart and incident upon this part of the chart at an angle of 45° (i.e. $3\frac{1}{2}$ feet above the 20/20 line and $3\frac{1}{2}$ feet in front of it").³ With this arrangement the incident illumination decreases from top to bottom of the chart because both the angle of incidence and the distance increase. Measurements in this laboratory, in an eye-lane equipped exactly as specified, showed a regular decrease from 22 ft-c at the top to 12.5 ft-c at the bottom. This range is slightly greater than that suggested in the previous section.

4. Commercial Test Cabinets. No attempt was made to make a complete survey of the many types of commercially available lighting cabinets, since the chart recommended by the Vision Committee for military services is too large to be used with any of these units. It is however of interest to compare the ranges of illumination provided by several such devices with that recommended by the authors and by the Vision Committee. Measurements were therefore made of the illumination on the test chart for several types of lighting cabinets in use in the Wilmer Institute. One type, illuminated by a single 15

watt "Cool White" Fluorescent tube mounted between two test charts, at a distance of 6-3/4 in., showed a variation of from 20 to 150 ft-c in different areas, although the advertising literature describing this unit states that it provides a uniform illumination of 10 ft-c.

A second type of unit is illuminated by four incandescent lamps, two on each side of the test chart, at a distance of about 12 in. In the eight units inspected, bulbs of five different wattages were found. Measurements of the illumination provided by one unit, equipped with four 25 watt bulbs, showed a range of from 16 to 38 ft-c.

5. Armed Forces Machine Vision Tester.⁶ In this instrument the background of the test letters is a diffusing glass plate illuminated from the rear by a 25 watt, frosted, "Lumiline" bulb. A metal bulbcap fitted over the light bulb is used to reduce the illumination incident on the diffusing plate. Measurements* were made on a stock model of the Vision Tester of the luminance of different areas of the diffusing plate behind the glass slide carrying the test letters. For these measurements the line voltage was maintained at 115 volts by means of a variac. The luminances in different areas varied from 8.1 to 11.4 ft-L. As regards uniformity these values are within the tolerances suggested by the authors and recommended by the Vision Committee. The absolute levels, however, are in most areas below those recommended.

B. Effects on Light Output of Fluctuations in Voltage and of Ageing of Light Source. Table I gives data on the percent variation in output with change in line voltage for the light sources used in the several units discussed in the previous section. The output at 115 volts is taken as 100%. (A variac and voltmeter were used to control the voltage at the desired level.) It will be noted that the incandescent light source shows a greater variation in output with change in voltage than the fluorescent source.

* The horn attachment of the Macbeth Illuminometer was used in making these readings.

Both types show a decreased output with time of operation. The average 200 watt incandescent lamp has a rated life of 750 hours, during which time its output decreases to about 80% of the initial value.⁷ The rated life of hot-cathode fluorescent lamps (pre-heat starting) depends to a considerable extent upon the burning time per start. With an average of three hours of operation per start, the rated life is 7,500 hours. Like the incandescent lamps, the output decreases to about 80% of the initial value during its rated life.⁷ "Lumiline" lamps have a rated life of 1,500 hours.⁷ Data pertaining to their decrease in output with ageing were not given.

C. Other Pertinent Factors. In evaluating the relative merits of different systems for the illumination of acuity charts an important practical consideration is the possibility that the light source will be replaced by a non-standard type. To lessen the likelihood of such substitution the standard source should be specified on a label firmly attached to the unit in a conspicuous place. With fluorescent tubes the possible substitutions are much fewer than with incandescent bulbs. In the lighting unit proposed by the authors, it is not possible to use a lamp of other than the specified wattage. If 25 watt "Cool White" or "White" Fluorescent tubes are used instead of the specified 25 watt "Daylight" tubes, the illumination will be increased by about 15%.

Generation of heat by the light sources is usually an undesirable feature. Regardless of the type of source, the amount of heat produced is directly proportional to the wattage.⁷ The unit equipped with two 25 watt lamps will, for example, produce one-twelfth as much heat as the installation requiring three 200 watt lamps to illuminate the test chart.

No exact estimates can be made as to the relative cost of the three different systems for illuminating acuity charts. The total cost of the materials used in constructing the pilot-model of the fluorescent unit was about \$15.00. Portable floor-stand units, similar to

those described, would probably be less expensive than the fluorescent lighting unit. The cost of the lighting system recommended by the Vision Committee depends primarily upon the labor charges for its installation. The easy portability of a floor-stand unit is perhaps an objection rather than an asset because of the likelihood that it will be lost or stolen. The permanent lighting installation, recommended by the Vision Committee, is on the other hand objectionable because of the difficulty and expense of transferring the equipment to another location. The fluorescent lighting unit is in this respect preferable to the other two systems, since when necessary it can easily be transferred as a unit to another installation.

SUMMARY AND CONCLUSIONS

A lighting unit equipped with two fluorescent light sources is described, suitable for use with the 22.4 by 23.6 in. acuity charts recommended by the Armed Forces-NRC Vision Committee. This unit fulfills the recommendations of the committee as to level and uniformity of illumination more closely than does its recommended system of overhead lighting. It has, moreover, other practical advantages as regards portability, cost, and maintenance of the desired levels under ordinary conditions of use.

An alternative system, consisting of either

a single incandescent or two fluorescent sources mounted on a floor-stand is also described, and shown to meet the requirements as to level and uniformity of illumination, when placed at the proper location in relation to the test chart.

ACKNOWLEDGEMENT

The authors wish to express their gratitude to Mr. A. Goebel for his assistance in the construction of the fluorescent lighting unit.

REFERENCES

- ¹ Farnsworth, D. Army-Navy OSRD Vision Committee. Minutes of the 11th Meeting. Apr. 1945.
- ² Burnap, R. S. and E. C. Jackson. The Illumination of Snellen Charts—An Investigation of Practice and Recommendations for Standardization. Transactions of Illum. Eng. Soc. 23: 1153-76, 1928.
- ³ Army-Navy-NRC Vision Committee. Manual of Instructions for Testing Visual Acuity. Univ. of Mich., Ann Arbor, Mich. Oct. 1, 1947.
- ⁴ Lythgoe, R. J. The Measurement of Visual Acuity. Medical Research Council, Spec. Report Series # 173. His Majesty's Stationery Office, London, 1932.
- ⁵ Altman, A. and W. M. Rowland. Measures of Acuity with Optical Simulation of Distance. Quat. Rev. of Ophthal. 8: 1-3, Mar. 1952.
- ⁶ Armed-Forces NRC-Vision Committee. Manual of Instructions: Armed Forces Vision Tester. Univ. of Mich., Ann Arbor, Mich., Nov. 1952.
- ⁷ IES Lighting Handbook, Second Ed. Publ. by Illuminating Engineering Society, 1860 Broadway, N.Y.C. 23, N.Y.



Memorable Events, Lives, and Books. Calendar of Commemoration for 1955

By

CLAUDIUS F. MAYER, M.D.

"How sweet the silent backward tracings!
The wanderings as in dreams—the meditation of
old times resumed—
Their loves, joys, persons, voyages."
(Walt Whitman: *Leaves of Grass*, 1855)

POPULAR calendars of the sixteenth century earned their attractiveness by their semiserious and facetious prophecies. These early almanacs were often called Prognostications since, in addition to the dark eclipses and world-threatening comets and changes in the moon, they ventured to tell about the influence of the stars upon human life, revolutions of princes and kings, peace and war, pestilence of man and animal. Frequently, the writers of these forecasting almanacs were astronomer physicians who switched their familiar technic of prognosis from Man the microcosm to the macrocosmic Universe.

But aside the prognostication method, there is another way, less prophetic but more accurate and pleasant, to guess how the curve of human history would turn in the 1955th year of the Lord. It is the Poet's "silent backward tracing." One plots the line of memorabilia, from this new year's coordinate toward the arbitrary zero of our Christian era, and hence back toward the start of culture and civilization, and one stops briefly at points measured in fifties and hundreds on the scale of years. This is the epicritical treatment of Time, a method more suitable to show the trend of human progress than any prognostication, while our meditation during the tracing could enliven the outstanding events, inspire the famous lives, and recall the scholarly achievements from the misty past for celebration and commemoration.

Here is for 1955 a selection from the tracings of jubilees and anniversaries.

PART 1: MEMORABLE EVENTS

Our search leads us back into the era before Christ, to the beginning of the Chinese history. We find that the legendary Emperor Yao, the astronomer and reformer of the calendar, reigned until 2255 B.C. He was followed by Emperor Shun (d. 2205 B.C.), a man fond of music and animals, who introduced the system of public examination of government employees. His successor was the great Yü who is remembered for his engineering projects and the drainage of the huge floods. He founded the Hia dynasty.

The year 1055 B.C. is mentioned by some as the date of the battle of Gilboa when King Saul died and David ascended the Jewish throne. Other significant changes of the ancient world can be recalled from history: —the enthronement of Sennakherib as King of Assyria (705 B.C.), and of Nebuchadrezzar II as king of Babylon (605 B.C.). The later made Nineveh the center of culture. It was he who had dreamt of a statue with clay feet, which Daniel, the prophet, explained as a sign of the king's downfall. The king of Babylon overthrew the Egyptians at Carchemish (605 B.C.). The pharaoh who opposed him was Necho, the same ruler who, in the year of his defeat, reopened the canal (precursor of Suez Canal) which, through Wadi Tumilat, connected the eastern Delta of the Nile with the Red Sea. Fifty years later (555 B.C.) Nabonidus became the ruler of Babylon, to be soon vanquished by the Persian Cyrus. Then, the Persian domination was extended into Africa, but in 405 B.C. they were driven out of Egypt. At the same time, Lysander, Spartan admiral, defeated the Athenian fleet at Aegospotami in a decisive battle which ended the Peloponnesian War. Lysander's victory put the Greek towns in Asia again under Persian rule.

In 255 B.C., Arsaces, the chieftain of some Iranian nomads, fled to the region of today's Khorasan where he founded the kingdom of Parthia to stand for about 500 years. At that time, Athens was liberated by a Macedonian king; it joined the Achaean League, a defensive confederation of towns against pirates. Sparta went to the assistance of Carthage which was then involved in the Punic Wars; near Tunis the Spartan Xanthippus defeated Atilius Regulus whom Rome sent to Africa with an army to destroy Carthage. Fifty years later (205 B.C.) P. Scipio Africanus became Roman consul, and he proposed the same.

The political power gradually shifted from the East to the West, and its center of gravity came to rest in Rome. An Athenian embassy, composed of the philosophers Diogenes, Carneades and Critolaus, was dispatched in 155 B.C. to Rome which then was expanding to the west. Hundred years later (55 B.C.) Pompey and Crassus, the new consuls, saw fit to send Roman troops under Gabinius to Egypt to settle the troubles and to restore the power of King Ptolemy Auletes. Since then, Egypt remained occupied by Roman troops to keep the royal dynasty under control. At the same time (55 B.C.), Caesar passed the Rhine, defeated some German tribes, constructed a bridge over the lower Rhine in 10 days, and invaded Britain the first time. Caesar landed on the coast of Kent with two legions.

Anno Domini 55 when Nero poisoned his 14-year old half-brother, Britannicus, at a banquet, Paul the Apostle was preaching in Ephesus. In the third century, the Roman empire had grown so huge that the emperor had to share his duties with an associate. The most famous emperor twins of the bipartite empire were Diocletian and Maximian who both abdicated in 305 A.D. Emperor Diocletian was the most cruel persecutor of Christians whose rule is remembered as the era of martyrs in church histories. Yet, after his abdication, he retired to his palace in Spalato, at one of the most beautiful bays of the Dalmatian Adriatic, where he had a vege-

table garden to cultivate. When Maximian, his twin in emperorship, once asked him whether he would like to resume the purple, he answered: "If you could see the fine vegetables that I raise here you would never again talk to me of such wearisome tasks." An answer worthy of any potentate who has grown tired of his power.

The year 455 A.D. witnessed the violence of the Vandals. The Burgundian, Goth, and other tribes of the Teutonic race which are called Vandals had conquered Africa from where, under Gaiseric, they attacked Italy and reached Rome in May or June 455 A.D. They pillaged the city for 14 days, destroyed its churches, except three old basilicas which they spared at the instance of Pope Leo the Great. Three hundred years later (755 A.D.) another power set out from Africa, threatening not only the politics of the West but also the entire Roman civilization. At that time, Abd-ar-Rahman left his hiding place in Ceuta (Morocco), and landed on Spanish soil where he founded the Omayyad dynasty and the Western Caliphate, with Cordoba as the capital of Moorish Spain.

Another jump on the graph of Time brings us to 955 A.D. when Olga, wife of Igor, prince of Kiev, was baptized at Constantinople; her baptism opened Russia to the cross. In the same year, Emperor Otto the Great defeated the Slavs who had been ravaging the Saxon frontier, and crushed the Hungarians on the Lechfeld near Augsburg. Christianity further spread when in 1155 King Eric of Sweden baptized the Finns. At the same time, Henry II of England obtained a bull from Pope Adrian IV authorizing him to invade and take possession of Ireland. This was the first Anglo-Norman descent upon the Emerald Isle.

The history of Scotland reports the interesting episode of Robert Bruce and the spider. When after one trial the Scotch general retreated from the English to a little island, one day in 1305 he saw a spider trying six times to fix its web on a beam of the ceiling and succeeding at its seventh effort. This taught him a lesson, encouraged

him so that by renewed effort he subsequently made himself master of Scotland. (Since then, no Bruce in Scotland would ever hurt a spider.) Anno Domini 1355 John Cantacuzenos, Byzantine emperor, abdicated, and retired to the monastery at Mount Athos to write the history of Byzance and various philosophical treatises. The rising force of the Turk finally reached Europe. Suleiman padishah, Orkan's son, crossed the Bosphorus, captured the fortress of Gallipoli, and converted it into a Turkish stronghold. May 22, 1455 is the anniversary of the first battle in the War of Roses. The battle at St. Albans opened a 30-year fight for the English throne. Between the House of Lancaster (red rose) and the House of York (white rose) the latter became the winner.

Hundred years later (1555), Protestants, Catholics, Jews, and Moslims persecuted each other in blind fanaticism. Many reformers, former bishops, were consumed at stake in Oxford, London, Worcester and elsewhere. The French Huguenots tried to escape, and a group settled at the site of the present Rio de Janeiro. The Peace of Augsburg assured tolerance to the Protestants. Yet, when to the amazement of the world Charles V abdicated and retired to the privacy of monastic life (1555), Philip II, his son and successor, showed little tolerance in the Netherlands, exciting the Dutch to rebel.

Early in the 17th century (1605) Barbados was acquired by the British. In the same year occurred that fantastic conspiracy which is known as the Gunpowder Plot. The plotters put 36 barrels of gunpowder in the cellar of the house of lords, and attempted to destroy King James I and the nobility on the Nov. 5 meeting of the parliament. In the history of India, the same year ends the Grand Oriental Era (or the Era of Akbar) which lasted for fifty years after the ascent of Akbar, Mogul emperor of Hindustan.

Anno Domini 1655, Charles X of Sweden invaded and occupied the entire Poland. England was at war with Spain, and Oliver Cromwell sent his admiral, William Penn, to conquer Jamaica; it is reported that many

on that island died from a fatal epidemic of dysentery and fever. Some years before (in 1638), a Swedish colony settled on the territory of the present Delaware, but New Sweden, as the colony was called, was conquered by the Dutch Peter Stuyvesant, and the Swedes were expelled (1655).

The year 1705 brought a few political changes. It also brought knighthood to Isaac Newton, a young husband to old Lady Castlemaine, senescent former mistress of Charles II of England, and an unusual adventure to the Scotch Alexander Selkirk. Sir Isaac was knighted by Queen Anne. The new husband of the 64-year old widowed lady was Robert Fielding, the handsomest youth in Queen Anne's times. At her marriage, the lady was mother to six of the illegitimate progeny of that debonair king: 3 dukes, 2 countesses, and one nun. Selkirk served aboard a ship, but after some quarrel the captain put him ashore on the desert island Juan de Fernandez from where he was accidentally removed three years later. His adventures in that solitary abode formed the ground to De Foe's Robinson Crusoe.

The year 1755 is memorable for the devastating quakes which it brought to various parts of the world. Quito in Ecuador and Lisbon in Portugal were destroyed. The earthquake in Lisbon lasted eight minutes, and most houses and ca 50,000 of the inhabitants were swallowed by the earth. Other towns in Spain, also in Morocco, were destroyed, and tremblings were felt even in Scotland. The history of the New World is rich in events at that year (1755). The oldest town of Missouri was founded by French settlers who came from Canada and Spain, and called their settlement St. Genevieve. At the site of Ticonderoga on Lake Champlain, on the lofty promontory the extremity of which forms Mount Defiance, rising 750 ft. above the lake, the French erected Fort Carillon.

In that year of 1755 occurred an important episode of the French-Indian War that is known as Braddock's Defeat. The British general, Edward Braddock, landed in Vir-

ginia in February, and with a column he intended to attack Fort Duquesne (Pittsburgh, Pa.). After crossing the Monongahela, they fell into an ambush of the French and Indians. On 9 July the battle turned into a massacre, and Braddock died. George Washington was the only aide not killed or wounded; yet, even he had 4 bullets through his coat, and two horses were shot under him. The Indians believed that he bore a charmed life, and his countrymen were proud of his courage and conduct. Braddock's defeat exposed the frontiers of Pennsylvania, Maryland and Virginia to the fury of the Indians along a line of 350 miles which the heroic Washington, with only 1500 ill-equipped troops, labored in anguish of soul to defend. The French-Indian War was also the time when the Yankee Doodle Dandy was born. The origin of this song is the subject of much speculation. One of the credible versions is the following. There was a ditty, the Nankee Doodle, which royalist English troops used to sing to mock Cromwell. The melody of that song immigrated to America during the colonial wars. In 1755, Dr. Richard Schuckburg, a regimental surgeon under General Amherst, made new verses to the old melody, and Yankee Doodle came to light. (The term was first used in the 1768 Sept. issue of the *Boston Journal of Times*.)

The political constellation of Europe in 1805 was of great interest to the entire world. The year brought Napoleon into clash with the rest of Europe which formed a coalition of powers against him. Two of the clashes were of major importance:—one on the sea off Cape Trafalgar, the other on land at the field near the Moravian Austerlitz. On Oct. 21, 1805, at Trafalgar, Horatio Nelson paid with his life for saving England from invasion by defeating the combined fleets of France and Spain. The victory deprived Napoleon from sea power, and sealed the incontestable authority of Great Britain over the control of the seaborne commerce of the world. However, on Dec. 2, 1805, at Austerlitz, Napoleon won his most celebrated victory over the combined

armies of the Austrian and Russian emperors. This famous "bataille des trois empereurs" opened up to Napoleon the road of conquering the whole continent of Europe. Napoleon's success was attributable in no small degree to the French National Guard which he reorganized by his Sept. 23 decree. He ordered every man in good health, between the ages of 21 and 60, to serve the Fatherland.

Thus, Anno Domini 1805 started the mighty duel between the Tiger and the Shark which for years remained the greatest spectacle of the political circus of Europe. In the U.S. the same year was a brief period of peace, prosperity, political harmony and prospects of expansion. Jefferson was reelected president, and on December 5 he sent a confidential message to Congress suggesting the appropriation of Florida. But King Charles of Spain did not want to sell, neither was then Napoleon in the mood to press such negotiations. Vice-President Burr caused the only trouble by plotting the detachment of the trans-Alleghany country from the Union, with British subsidy. The war with Tripoli ended, and the U.S. treasury paid \$60,000 ransom to the reigning pasha of the Barbary pirates for the liberation of the U. S. S. *Philadelphia* prisoners. Lewis and Clark finally reached the Columbia River and the Pacific Ocean in their expedition that started a year before. Changes on the U.S. map set off Indiana as well as the area of Michigan from the Northwest Indian Territory (1805).

Queen Victoria reached the 18th year of her reign in 1855. Until then, anyone in England could be nominated for employment by the British government. At the Queen's order, Civil Service Commissioners were established, and the government service was thoroughly reformed. Europe was still engaged in the Crimean War (which started a year before at France's prompting). After a long siege, Sebastopol fell on September 8. Meanwhile, Nicholas I was killed by nihilists, and his son, Alexander II, became the Tzar. Mexico drove away Don Antonio

Santa Anna, and made Carrera his successor, while in the U.S. Lincoln was unsuccessfully canvassing Illinois against Douglas as a candidate to the Senate, and Robert E. Lee entered his last year of service as superintendent of West Point.

Arts and Sciences

Our attention now turns to the highlights of progress in culture and civilization, in science and medicine. There are a few early dates. A stone bridge was constructed over the Danube by Apollodorus, Greek architect, for the advancing troops of Emperor Trajan (105 A.D.). A pandemic pestilence started in 255 A.D. the symptoms of which were described in a contemporary sermon of St. Cyprian (the plague of Cyprian). Several interesting events can be recalled from the late Middle Ages. The Rialto Bridge was rebuilt in Venice (1255). In the same year, Arezzo University received its statutes. Another university at Orleans was recognized by Pope Clement V and endowed with new privileges in the year when the see of St. Peter was transferred to Avignon for some years to come (1305). In Paris, the College of Navarre was created, to remain the most famous of all French colleges for several centuries. Siena obtained its city hospital (1305).

An important mission started its way in 1355 at the order of the king of Scandinavia; it was to investigate the status of Christian religion in Greenland. The mission, in charge of Poul Knutsson, stayed away for ten years, and it most likely surveyed also the American Vinland. A memorable event of exploration is recorded for 1455, when the Venetian Aloise Cadamosto, in service of Prince Henry the Navigator, visited the Canaries and the coast of Africa, and sailed as far as the mouth of the Gambia River. Another fifty-year turn in the world chronicle (1505) reveals the foundation of the King's College at Aberdeen, and of the Christ College at Cambridge. The Sevilla University received its new charter from Pope Julius II. Scottish surgeons were granted their charter for the

establishment of the Royal College of Edinburgh, while the French barber-surgeons received their first support from the medical faculty of Paris. In Erfurt, Germany, Martin Luther graduated as doctor of theology.

Anno Domini 1555, the St. John College of Oxford was founded, and a university was established in Nagyszombat, Hungary, later to be transferred to Budapest. Suleiman the Magnificent finished the construction of the finest mosque in Turkish style in Istanbul while the pasha of Algeria tried to destroy an old Roman monument, the grave of Cleopatra Selene, daughter of Marc Anthony and Queen Cleopatra. The monument was saved from destruction by a swarm of big black wasps which rushed out from under the stones and stung the workers to death. England began to manufacture the 4-wheeled coaches, yet not until another fifty years did the tallyho become a common vehicle of traffic. Other notable events of 1555 were that Conrad Gesner, Swiss physician, climbed the grassy mounds of the Gnepfstein in the Alps, and the French itinerant surgeon, Pierre Franco, performed his first high-section operation on the urinary bladder for calculus.

In 1605, after ten years' labor, the Bridge of Sighs in Venice was finished, connecting the ducal palace with the state prisons. Gieszen opened a botanic garden. Antwerpen issued the earliest European newspaper, the *Nieuwetijdinghe*, an illustrated war journal, precursor of a daily gazette that ran for 200 years. In 1705, with the revival of interest in anatomical dissections, a chair of anatomy was established at Edinburgh, and Robert Elliot was made the first professor at an annual salary of £15. In the same year, Edmund Halley announced his researches on the orbits of comets, and Brisseau and Maitre Jan revealed the true nature of cataract of the human eye.

A semi-century later (1755) the Moskva University was founded by Czarina Elizabeth. The Neapolitan government started the excavations at Pompeii, the ancient Roman

town which had been destroyed in 79 A.D. and buried by earthquake and the ashes of the Vesuvius. Marquis Tanucci established a museum at Naples to house all the recovered antiquities. In the same year, an academy of sciences was founded in Mannheim. In Paris, Abbé L'Épée's school for deafmutes commenced its humanitarian work. It was the first of its type, and the abbé, who also invented a sign language for the deaf, maintained the school at his own expense until his death (1789).

Among the inventions and discoveries of 1755 the lightning rod of Franklin deserves the first mention; it resulted from his earlier experiments with the kite. Joseph Galien, Dominican friar and professor at Avignon, proposed in his aeronautical speculation to collect the diffuse air of the upper regions and to enclose it in a huge vessel extending more than a mile every way, so that it could carry 54 times as much weight as did Noah's Ark! Chemistry was advanced by Joseph Black, Scottish Physician and chemist, who discovered the "fixed air" (CO_2) in the bicarbonates; he also showed that the principal salt of Epsom springs in Surrey was magnesium sulfate. Botulism in Germany, and pellagra (Thiery) were described. The treatment of catarrhal deafness by injections into the Eustachian tube through a catheter inserted into the nose (Wathen), and preventive inoculation against bubonic plague (Weszprémi) were also proposed in 1775.

Anno Domini 1805 the "Castle Garden," the circular fort on the Battery of New York, was built, a landmark to be used successively as opera house, civic receptorium, landing station for immigrants, and aquarium. Among the remarkable inventions of that year were the chimney-sweeper machine of Smart to supersede the climbing boys, the torpedo of Fulton, and the earliest precursor of safety matches made by the French chemist Chancel. Another French chemist, J. L. Gay-Lussac, discovered the volume law of gas mixtures, while Young and Laplace announced the surface-tension theory of capillarity.

The revival of romanticism opened up a wide field to the arts and sciences. In 1805, when Beethoven published his opera *Fidelio* and his Kreutzer and Waldstein sonatas, Gall, the founder of phrenology, left Vienna for a lecture tour in Europe. In Germany, the increasing interest in mind and its diseases called for the publication of the first psychiatric journal (*Magazin für psychische Heilkunde*). The German pharmacist, F. W. Sertürner, isolated "morphium" from opium (without knowing that Delrose did the same in 1803), yet it took fifty years before morphine came into general use. John Haygarth, of London, differentiated various forms of arthritis in his study of acute rheumatism, while Gaspard Vieusseux wrote a memoir on an obscure epidemic then prevalent in Genève, thus leaving to us the first clear description of cerebrospinal meningitis. In America, Philip Syng Physick began to teach a course of surgery at Pennsylvania University.

One hundred years ago (1855), culture and civilization reached one of their periodic peaks of development. The first agricultural college in the U.S. was established at Cleveland, and several hospitals opened: the Northern Ohio Hospital for the Insane, the Children's Hospital at Philadelphia, and the Hospital for Women's Diseases which Sims created in New York City. In Berlin, Heinrich Albrecht, professor of dentistry, established the first dental and stomatological clinic of the world. Melbourne University was enriched with a library, and Amsterdam got its Academy of Sciences. The German physicians gathered in a *Gesellschaft für Heilkunde*, and in America the Sigma Chi fraternity was born.

The conquest of the Earth continued. David Livingstone, Scottish missionary, turned eastward in his African travels, to follow the Zambesi, and discovered the Victoria Falls of the river. Captain McClure received £5,000 and was knighted for his earlier discovery of the Northwest Passage. Dr. Isaac Hayes (1832-81), surgeon of the 1853-55 Arctic expedition of Kane, returned to the U.S. in the firm belief that there must exist

an open sea around the North Pole. Swiss mountain climbers reached the highest point of Monte Rosa in the Alps.

Engineering knowledge and technology produced marvels. The construction of the 25,000 ft. long Hoosac Tunnel, the first prominent tunnel in America, began in 1855, with the first use of air-drills and nitroglycerin in such construction work. The headings driven from opposite ends were measured with such accuracy that the error in alignment and in level was less than one-sixth of an inch. The advancement of technology also helped the perfection of the war machine. Ironclad floating batteries and small turreted ships were first used in the Crimean War. Adams, of London, brought out the double-action revolver, and Sir William George Armstrong's first gun made its appearance to revolutionize artillery. Bessemer patented his process for the manufacture of steel. Aluminium was produced from cryolite; the typeprinting telegraph was perfected; thermoelectricity was discovered (Thomson); the Bunsen burner was invented; the bicycle was improved; the wholesale manufacture of leather-cloth was made possible; and the vulcanization of rubber was invented by the American Charles Goodyear, Jr., which made possible the production of various surgical matériel, and revolutionized the art of prosthetic dentistry. No wonder that the world was amazed when the International Industrial and Art Exposition opened in May 1855 at Paris, showing the great progress in every field of human knowledge. Beside the technical marvels, there were also the best products of European art to look at, statues and paintings by rivalling French, German and British artists: by Cabanel, Delacroix, Ingres, Bouguereau, and others.

Great progress was also made in the field of sanitation and general welfare. In England the Life-Rocket Department was organized for rescue at sea. Several new laws promoted the British public health. Hamburg's sanitation was improved by a sewerage system. Paris made efforts to introduce horse-flesh into the meat-market, and the Hippophagic

Society was created, but all tricks of the French culinary art were useless to disguise horse-flesh on the banquets of the society. In the U.S., a temporary State Board of Health was established in New Orleans, the first in this country. The 1855 annual meeting of the American Medical Association condemned homeopathy, while its special (first) conference complained of the inferior status of medical education, and the low standards of the 160 medical schools of the country.

The year of 1855 has opened a new era for the philosophy of science. Extreme materialism, as a reaction to the former speculations of *Naturphilosophie*, was enthroned in the mind of many, and the books of Karl Vogt ("*Köhlerglaube und Wissenschaft*") and of Friedrich Büchner ("*Kraft und Stoff*") became the bibles of materialistic science. New medical discoveries and developments of 1855 included: the description of the cholera vibrio by Filippo Pacini (Robert Koch did not know of this), Pettenkofer's studies on epidemiology of cholera, Gerlach's injection of vessels with a mixture of carmine ammonium and gelatine, the description of Addison's disease, of Landry's paralysis, of multiple sclerosis (Türk), discovery of leucin and tyrosin (Frerichs), artificial respiration (Marshall Hall), electrotherapy (Duchenne), subcutaneous injection of morphine and opium (Wood).

PART 2: MEMORABLE LIVES

Our new-year retrospect resuscitates many figures of the classical past who left a more or less deep mark in the memory of mankind. A number of the Greek playwrights and historians fit the line of our centennial tracings:—Aristophanes (b.455), the comic dramatist; Sophocles (d.405), the tragic poet; Herodotos (d.405), father of historiography; Apollodoros (d.405), the painter; Xenophon (d.355), author of the *Anabasis*. The Roman Lucretius Carus (d.55) became a celebrity by his philosophical poem "On the Nature of Things." Another Roman, Tacitus (b.55 A.D.), perpetuated his name by a num-

ber of annals and histories which he wrote in a style of "Tacitean brevity." Some will remember Plotinus (b.205), neoplatonic philosopher, who brought to Rome from Egypt a spirit of mysticism, and suggested the foundation of an ideal city ("Platonopolis") where people would live according to the dreams of Plato.

In the sixth century of the Christian era we meet the first physician on this year's list of commemorations. Alexander of Tralles (d.605) practiced in Byzance and Rome, and wrote his 12-book medical encyclopedia in Greek (*Biblia iatrika*). Abu-Mashar (or Albumazar) (b.805), physician and astronomer, lived in Bagdad during the reign of the successor of Harun-ar-Rashid, and in a grand observatory he watched the skies and cast horoscopes which were still printed and sought in the renaissance. Almost his contemporary was another prominent physician, Isaac the Jew (b.855) whose works on uroscopy and diet were in great fashion in the Middle Ages. The Byzantine scholar, Michael Constantine Psellus (d.1105) wrote an encyclopedia, and various treatises on the demons, diet, medicinal value of gems, baths, etc.

Among the memorable men of the high Middle Ages we find Arnold of Brescia (d.1155), bishop and political and religious reformer who was burnt alive and his ashes were thrown into the Tiber. Another bishop, Teodorico Borgognoni (b.1205) became known by his "*Cyrurgia*" in which he advocated the dry treatment of wounds, the use of the salve of Sarracens (a mercurial ointment), cautery, and moderation in the treatment of fractures by mechanical apparatus. Enrico Dandolo (d.1205), doge of Venice, whose mercantile spirit paved the way for Turkish invasion, and Batu Khan (d.1255), Tartar conqueror of Russia and founder of the "Golden Horde" state at the Lower Volga, also belong to the medieval segment of our graph. Another empire builder was Stephan Nemanieh Dushan (d.1355), czar of the Serbs and Bulgarians, whose efforts to create a Greco-Balkan state furthered the way of Turkish domination of Europe.

Among the ambassadors of Byzance, sent to western Europe for recruiting help against the Turks, was Emanuel Chrysoloros (b. 1355) whose Greek lectures in Florence initiated the era of Greek humanism. His contemporary was Ali al-Qalqashandi (b.1355), Egyptian encyclopedist whose enormous collection of information also tells of the Egyptian postal service, an excellent service by means of pigeons organized for peace and war to protect the caravans and armies; he also described the diseases in Sudan, and his work ("*Dawn of the Weak-Sighted*") contains the earliest reference to trypanosomosis. Chinese people will commemorate the work of T'o-T'o (d.1355) government employee and historian; he edited the official histories of three dynasties in 746 books ("chüan") (published in the 19th century in 136 volumes).

The most famous death of the early fifteenth century was that of Timur Lang (or Tamerlane) (d.1405), the Stalin of the Middle Ages. His conquests dominated the history of the 14th century, and they influenced the whole of Asia and Europe. He practically owned the entire Orient, except China. He fixed the seat of his empire at Samarcand where he posed as patron of sciences and arts, building new bazaars, mosques, libraries, observatories, palaces and gardens, and collecting (sometimes kidnapping) many learned men, physicians and astronomers. He created a new culture which his successors later expanded into the Mogul culture of India. At his invasion, the gypsy tribes of India scattered throughout the world. In his mausoleum, the Gûr-i-Mir, his tomb still stands, covered with an enormous block of green jade. His victory (in 1402) over the Turks slowed down for ca 50 years the advancement of Turkish troops into Europe, to the great appreciation of the Christian rulers.

Other fifteenth century notables who come to our mind are the Blessed Fra Angelico (d.1455). Toscana Dominican, the painter of many altarpieces and frescoes; Pope Nicholas V (d.1455), early patron of humanism, and chief founder of the Vatican Library; and Johann Reuchlin (b.1455), German

humanist, highly esteemed for the introduction of Hebrew studies into modern Christianity. Ivan III (d.1505), founder of the Russian Empire, invited many foreign physicians to settle in Moskva. Fifty years later (1555) the world of science lost several eminent men: Georg Bauer (or Agricola) (b.1490), father of mineralogy, whose famous work on mining and metallurgy was translated into English by Hoover, engineer and former President of the U.S.; Antonio (Musa) Braccavola (b.1500), Italian doctor, the favorite of European aristocracy, and student of the effects of drugs, purges, syphilis, which he studied by experimentation on criminals; Jacques Dubois (or Sylvius) (b.1478), teacher of Vesalius and friend of Rabelais whose name is unjustly associated with the "Sylvian duct"; Polydore Virgil (b.1470), Italian priest who turned Anglican, the author of the earliest history of science (*De rerum inventoribus*, 1499) which saw more than 200 editions; Edward Wotton (b.1492), physician of Henry VIII, and author of a book about animals by which he earned the appreciation of zoologists. In 1555 was born Thomas Cavendish (d.1592), third circumnavigator of the globe.

Anno Domini 1605 died Boris Godunov, intriguing minister of Tzar Feodor I, to become the hero of a 19th century Russian opera. Akbar, the wise Mogul emperor of India, the "Guardian of Mankind," was buried in the same year. John Davis (b. 1550), English Polar explorer, who discovered the Davis Strait west of Greenland, was killed in a fight with the Japanese off the coast of Malacca. Among the physicians of the 17th century the name of Sir Thomas Browne (1605-82), will remain the best known; he reconciled his scientific skepticism with his faith in his *Religio Medici* (1642), a much reprinted, translated and disputed work in English; he died on his 77th birthday. Another world-famous figure of the skeptical 17th century was Pierre Gassendi (1592-1655), mathematician and French materialist philosopher, one of the few who urged experimental research at his times. Among the pupils of Gassendi there were such men of

letters as Molière, and Cyrano de Bergerac (d.1655), French dramatist whose comical histories of the Moon States and the Sun States are early examples of science fiction. This dramatist was continuously involved in quarrels and duels (which made him the loveable figure of the 5-act drama of Rostand, 1879). One of the Mayflower pilgrims, Edward Winslow (b.1595) also died in 1655. He was governor of the colony, and his marriage was the first in New England, and his wife gave birth to the first English child in America. The New Year brings the tercentennial birthday anniversary of Caspar Thomeson Bartholin (or Barthelsen) (d. 1738), descendant of a famous Scandinavian family of doctors, and professor of anatomy at Copenhagen. His name is the eponym of the ducts of sublingual gland and of the glands in the large lips of the vulva. Christian Thomasius (1655-1728), German philosopher and jurist, will stand as a champion of the freedom of thought. He founded the first German periodical (1688-89), which he edited until he was forbidden to make any oral or written utterance, under penalty of imprisonment.

The beautiful and intelligent Ninon de L'Enclos (1615-1705) exercised her art in 17th century France. Even when 90 years of age, she retained her personal charm. The salon of this celebrated courtesan was visited by the most important persons of her era because, though she acted like *Lais*, she could reason like Socrates. It became the custom of the most respectable families to send their daughters to her house to acquire taste, style, politeness and refinement of manners. Queen Christina herself, when she left Sweden for Paris, wished to visit in that city the French Academy and Ninon only. As a contrast to Ninon, let us add here the name of Michael Wigglesworth (1631-1705), American Calvinist and Harvard graduate whose poems fought against wickedness among the early New Englanders. He believed that, before the arrival of the English, America was the residence of the Devil. Guillaume Amontons (b.1663), French physician, and John Ray (b.1628), English priest and naturalist also

died in 1705. Amontons invented the aerial or optical telegraph, while Ray's researches made him the founder of natural history in England.

Three noted Frenchmen died in 1755: Bishop Belsunce, Baron Montesquieu, and the Duke of Saint-Simon. Belsunce excelled by his heroism and humanitarianism during a plague epidemic in his Marseilles. Montesquieu became famous as a political philosopher. In his *Persian Letters* he ridiculed his countrymen, while in his often edited *Spirit of the Law* he laid down the principles of civil liberties. Saint-Simon was the author of the posthumously published memoirs in which the court life during Louis XIV is excellently described. Two contemporary explorers of Russia lost their lives in the same year. One of them, Johann Gmelin (b.1709), travelled in Siberia and wrote volumes about the East-Asian plants, while the other, Stephan Krachennikov (b.1713), spent ten years in Kamchatka as a naturalist.

Several famous and infamous people who played some role during the French revolution were born in 1755, among them Marie Antoinette (d.1793), Queen of France; Jacque Hébert (d.1794), her greatest calumniator who established a Temple of Reason in the Notre-Dame; Brillat-Savarin (d.1826) French gastronome and writer on the art of dining. He escaped to New York where he played in theater orchestras. Others of the 1755 vintage include Bülow (d.1816), Prussian general, who saved Berlin several times from the French and was in command during the Waterloo campaign; also Gilbert Charles Stuart (d.1828), better known as the American Stuart, famous portrait painter of George Washington and of foreign notables.

Bicentennial (1755) birthday celebrations are also due to a number of distinguished foreign physicians and scientist. France will celebrate Corvisart (d.1821), the cardiologist and Napoleon's physician, and Fourcroy (d.1809), the physician chemist. Germany will commemorate Hahnemann (d.1843), the founder of homeopathy, and Soemmering (d.1830), the anatomist and artistic designer

of atlases. Hahnemann's Organon (1810) became the guide of a group of medical practitioners who were dissatisfied with the polypharmacy of their times. England has two bicentennial birthdays for physicians: one of James Parkinson (d.1824), the other of Caleb Hillier Parry (d.1822). Parkinson, a complex character and radical political agitator, also excelled as a scholar. He gave the first English description of appendicitis (1812), and left a classical report of the shaking palsy (1817), or the "Parkinson disease." By his studies of fossils he also gained fame as a geologist and paleontologist. Parry was a fashionable doctor at Bath, well-known English watering place, but his aristocratic practice did not diminish the acuteness of his eyes for clinical observation. He noted eight cases of exophthalmic goiter (1786) long before anyone else would have recognized it. He also suggested that angina pectoris is caused by coronary disease (1788), and he observed that pressure on the carotid sinus slows down the heart. He was the father of Sir Edward Parry (1790-1855), Arctic explorer. Captain Robert Gray (d.1806), the American discoverer of Columbia River (in 1788) was also born 200 years ago.

Anno Domini 1805 the British Navy lost Horatio Nelson (b.1756), the "hero of the hundred fights." He was a sailor, and little else, since he entered the service at 13 years of age. We should remember also Gabriel Gruber, Austrian doctor of medicine, who died in 1805 as the General of the Jesuit Order (in Russia). The world of art mourned the loss of Jean Baptiste Greuze (b.1725), French painter of grace, naivety and sentiment, who died in the Louvre in great poverty. Johann Christoph Friedrich Schiller (b.1759) also left the world in 1805. His life is of special interest to military surgeons because Schiller started his career as a military surgeon. The son of a gardener of the Duke of Württemberg, the boy was sent by His Excellency to the military academy at Stuttgart; then, the young man studied jurisprudence and medicine, and passed the required examination of a military surgeon

in 1780, the very year when his revolutionary drama, the *Robbers* was published. Some people were scandalized, others received the work with the most violent enthusiasm, while the Duke himself requested Schiller not to publish anything further without submitting it for inspection. When the *Robbers* was produced on stage in Mannheim, the poet could see the performance only by being AWOL; thereupon he was arrested and jailed for a fortnight. Then, he quitted the Army in 1783, and became a full-time writer. His poetic works (*Wilhelm Tell*, *Wallenstein*, *Song of the Bell*) will make the name of this military surgeon known to all peoples of all times. In America, Orono, Indian chief, who lived to hunt in three different centuries, died at Old Town at the age of 113 years.

Among Schiller's contemporaries we may mention Currie, Gmelin, Hensler, and Russell who all died in 1805. James Currie (b.1756), Scottish physician and editor and biographer of the poet Robert Burns, made the first systematic use of clinical thermometry, and used water affusions in the treatment of fevers. Johann F. Gmelin (b.1748), German physician and chemist, was a voluminous writer on every part of natural history, and left a valuable history of chemistry. Philipp Gabriel Hensler (b.1733) wrote the histories of leprosy and syphilis. Patrick Russell (b.1727), of Scotland, served in India, and described the snakes of that country. The viper *Duboisia russellii* carries his name.

Several famous politicians, artists and men of letters took their origin in 1805, as Hans Christian Andersen (d.1875), the writer of fairy tales in Denmark; Wilhelm v. Kaulbach (d.1874), German painter of history and of "Weltgeist"; Bulwer (d.1873), prolific English writer, and the author of *The Last Days of Pompeii* (1834); Lesseps (d.1894), French consul and promoter of the Suez and the Panama Canals; Mazzini (d.1872), Italian patriot and chief instigator of the revolutionary era of 1848. Among the European physicians and scientists we found the following six with the same 1805 birth-year: Chassaignac, Geoffroy-St.-Hilaire,

Graham, Mathijssen, Skoda, and Wagner. C. M. E. Chassaignac (d.1879), Paris surgeon, became known by his use of rubber tubes for the drainage of abscesses. Isidore Geoffroy-St. Hilaire (d.1861) developed the science of teratology. He also studied the domestication of animals, and the wholesomeness of horseflesh as a human food. Thomas Graham (d.1869), English chemist, studied many problems of physical chemistry, especially dialysis of fluids, diffusion of gases, and osmotic pressure. He introduced the terms colloid and crystalloid into our scientific language. Anthonius Mathijssen (d.1787) was a Belgian military surgeon; to him we thank the modern plaster of Paris bandage. Josef Skoda (d.1881), Czech member of the New Vienna School, was a therapeutic nihilist, but his studies on percussion and auscultation are still of value ("Skoda's resonance"). Rudolf Wagner (d.1864), physician, anthropologist, and archeologist, was a voluminous writer; he edited a physiological encyclopedia and discovered the germinal vesicle of the human ovum (in 1835).

For the United States the year of 1805 brought William Lloyd Garrison (d.1879), who organized the American Antislavery Society, and devoted all his time to the abolition of slavery. The founder of Mormonism, Joseph Smith (d.1844) has the same birth-year. After a life of a visionary and fanatic, he was lynched by a mob at Carthage, Illinois. Sam Gross (d.1884), Jackson (d.1880), and Pancoast (d.1882) are the outstanding American physicians of the same year's crop. Samuel David Gross had a remarkable career. He was born near Easton, Pennsylvania, of Dutch ancestry. From an ignorant boy who could not talk English at 15 he grew into the father of surgical pathology and the most famous surgeon in the America of his time. He was teacher of anatomy at Ohio College, of pathology at Cincinnati College, of surgery at Louisiana University and at Jefferson College. He wrote many books and articles, also a *Manual of Military Surgery* which he published soon after the Civil War started (1860). He was the founder of several Philadelphia societies, also of the

American Surgical Association, and in 1868 he was elected president of the American Medical Association. A national monument was erected in his honor at Washington, D.C. There is also an \$1,500 prize which carries his name in the Philadelphia Academy of Surgery. Charles P. Jackson was the practitioner in Boston who experimented with ether anesthesia in 1841-42, and recommended to William Morton that he should use ether narcosis for a tooth extraction in 1846. Joseph Pancoast was professor of surgery at Jefferson College where he is remembered for his plastic reconstruction of the bladder and for his skill as a designer of procedures and surgical instruments.

Many died in the Crimean War. In 1855 two of the allied leaders were lost: Bruat, the French admiral, and Lord Raglan, the Army commander, who died of dysentery. Other losses of the same year included Sir William Parry (b.1790), Charlotte Brontë (b.1816), François Magendie (b.1783), François L. I. Valleix (b.1807), Elisha Bartlett (b.1804), T. R. Beck (b.1791), and Horatio G. Jameson (b.1788). Parry travelled to the Spitzbergen on his ship Hecla, and first attempted to reach the pole over the ice (his highest point 82° 40'). Brontë, one of three sisters, wrote *Jane Eyre* (1847), one of the most remarkable English novels; she died of tuberculosis. Magendie was pioneer in experimental physiology, and his research included a variety of subjects (cerebrospinal fluid, foramen Magendie, deglutition and vomiting, pharmacological studies, etc.). Valleix, Toulouse physician, described the tender points of nerves in neuralgia. Bartlett was the first medical philosopher in America, and he differentiated the typhoid and typhus fevers. Beck wrote the first important textbook on forensic medicine in America (1823), while Jameson performed the first excision of the upper jaw (1820). He was surgeon in Baltimore Hospital, and experimented on living animals for the study of traumatic hemorrhage (1827).

The centennial birthday anniversaries are numerous this year. England will remember:

W. H. Battle (d.1936), surgeon; Sir John Bland-Sutton (d.1936), surgeon, known by the systematic examination of the animals dying in the London Zoo; Sir Robert Jones (d.1933), pioneer in orthopedic services during World War I; Sir D'Arcy Power (d.1941), medical historian; J. J. Pringle (d.1922), dermatologist and describer of sebaceous adenoma. The biggest celebration is due to Sir David Bruce (d.1931), who entered the Army Medical Corps and became major-general. He served in Malta where he discovered the cause of Malta fever (1887) in a microorganism (later named *Brucella*). In 1894 he found the trypanosoma (now called *Tr. brucei*), which produces nagana or tsetse-fly disease in the horses of Zululand. He also investigated sleeping sickness in Uganda, and observed that it was also due to a trypanosoma. France will honor Anatole M. E. Chauffard (d.1932), describer of a variety of familial hemolytic jaundice. German countries will recall the memories of Gaertner, Neisser, Simmonds, Ribbert, and Edinger. Gustav Gaertner (d.1921) described a type of enteritis bacillus, and invented a tonometer to measure blood-pressure by means of a compressing ring applied to the finger. Albert Neisser (d.1916), dermatologist at Breslau, discovered the gonococcus (1879; now called *Neisseria*). Morris Simmonds (d.1925), German pathologist, studied fatal pituitary cachexia. Moritz Ribbert (d.1920) was the promoter of the embryonal origin of cancer, while Ludwig Edinger (d.1918), neurologist at Frankfurt, described thalamic pain, and various nuclei and tracts of the neuraxis. He is also the founder of comparative neuroanatomy.

In our country, the socialists will rejoice in the memory of Eugene Victor Debs (d.1926) who was at the bottom of many labor troubles, including the big railway strike of 1894. Another type of friend of the working man was Robert M. LaFollette (d.1925), of Wisconsin, several times governor and U.S. Senator. In whatever stand he took he was always dramatic and heroic, ever the crusader against wrong and social

injustice, eternally the champion of the underdog. Andrew Mellon (d.1937), former Secretary of Treasury, American banker and founder of the Art Gallery in Washington was also born a hundred years ago. Among the American doctors centennial celebrations are due to Edward H. Angle (d.1930), internationally known by his system of orthodontic regulation of teeth; James L. Corning (d.1923), introducer of spinal anesthesia; Luther E. Holt (d.1924), pediatrician, who advocated pasteurization of milk and isolated heparin; William C. Jarvis (d.1895), otorhinolaryngologist, and William T. Sedgwick (d.1921), professor of biology and director of the Massachusetts Institute of Technology, who did much work on sewage and purification of water, and gave pioneer courses in the history of science.

PART 3: MEMORABLE WORKS

It is always difficult to decide which book is memorable. Should we call memorable the metrical semi-Saxon chronicle of Layamon, Worcestershire monk, which he wrote in 1205 A.D.? The title of that work is *Brut*, and, it describes the legendary origin of Arthur and the other British kings who are derived from the mythical Brutus, great-grandson of Aeneas of Troy. It is a monument of English literature, yet some of us perhaps never even heard of it. And so it is with other ancient works. Unless a work came up to our modern times in many re-visions and translations or its title became a traditional proverb, the book can hardly be called memorable, though still important.

Such important work is the *Rihla*, an account of 25 years of travel which Ibn Battuta (1304-78), the greatest traveler of medieval times and of Islam, dictated to the secretary of the sultan of Fez. This work was finished December 13, 1355, that is, six hundred years ago, but it was not known to Europeans till the 19th century (when it was also printed for the first time). Yet, it is the most remarkable source of geographical, anthropological, natural historical and medical information on the Moslem countries of the

14th century. In the same way, the *Bellifortis* manuscript of Konrad Kyeser (1366-1405) which was completed in 1405 is one of the most important illustrated handbooks on military engineering, but it can be hardly called memorable.

On the other hand, the *Centuries* or *Prophecies* of Michel Notre-Dame (or Nostradamus), celebrated physician and astrologer in France, which was published in Lyons in 1555, must be regarded memorable, since it had been republished many times, it had provoked an immense amount of controversial literature, it had been even condemned by the Papal Court in 1781, and it is still much sought after by all kinds of people. But should we call the book important? We could quote a number of other 1555 books that are, in the history of science, more important than Nostradamus, such as Belon's monograph on birds, or the Spanish translation of Dioscorides prepared by Laguna, or the *Collectio chirurgica* edited by Conrad Gesner in Zürich, or the history of Scandinavian people by Olaus, the archbishop of Upsala.

Among the popular books one of the most memorable is *Don Quixote* of Cervantes, the first part of which was published in 1605. The book was an immediate success, and was translated into several European languages. Even our modern doctor will keep a copy of this typical Spanish romance on his shelves. A truly memorable and important work is the *Advancement of Learning* written by Francis Bacon and published in 1605, but though it is one of the basic monuments of experimental science, it is less known today than *Don Quixote* though both are of the same age.

Another memorable book which today became an object of ridicule and curiosity is the dictionary of Samuel Johnson (1709-84) published in 1755. The book ran through several editions; its definitions reveal the caustic wit of their compiler. Voltaire's notorious *La Pucelle* also appeared in 1755, a work which defiles the heroic story of the Maid of Orleans. Nevertheless, it is still better remembered than the ophthalmological

atlas which Dr. Zinn published at the same time in Göttingen. One hundred years ago the popular books of the year were *Little Dorritt* by Dickens, Spencer's *Principles of Psychology*, the *Newcomes* of Thackeray, and the autobiography of the mulatto Douglas which attained a rapid sale of 20,000 copies.

It was in 1855 when Longfellow wrote his *Hiawatha*, sole survivor of poetic attempts to naturalize the American Indian in literature. Then, there was the *Leaves of Grass* of Walt Whitman (1819-1892), Brooklyn sixfooter, which also came out in 1855 when Brooklyn was still an overgrown village. First, nobody bought it. Then, after the third edition, which the author intended to give away free as the previous ones, the hell-raising came since the poems were dealing with "forbidden subjects." Whitman was immediately dismissed from his civil service job when the Secretary of Interior found a copy of the booklet in its author's desk. Yet, it is now a world-famous representative of American literature, a truly memorable book:

"A child said What is grass? . . .

. . . I guess it is the handkerchief of the Lord,
A scented gift and remembrancer designedly dropt,
Bearing the owner's name someway in the corners,
that we may see and remark, and say Whose? . . .

Among the scientific books of 1855 the most remarkable were Henle's 3-volume set of anatomy, Stromeyer's basic work on military medicine (*Maximen*), and the much abused works of Vogt and Büchner, German materialistic philosophers previously mentioned.

Fifty Years Ago

The memories of fifty years ago are still with us like the songs of yesteryears, dormant but ready to sound at a pick, as fragments of melodies, headlines, broken pieces of mirror, reflecting the odds and ends of 1905. The Kangra earthquake in India, the dissolution of Swede-Norwegian union, the capture of Port Arthur and the negotiations of Theodore Roosevelt to end the Russo-Japanese conflict, the all-Russian strike and the rise of Lenin and his bolshevism were the

most important international events. Teddy Roosevelt was inaugurated president for a full term, and Elihu Root was appointed his Secretary of State. The American dailies reported the advance of radical socialism, the scandals of insurance companies and the grand investigation made by Charles E. Hughes in New York, the wave of nickelodeons which swept over the country, the enormous rate of immigration to the U.S.

It was a new life, and the social changes were shown in the music of the year. Franz Lehár's "Merry Widow" operetta, which was produced on December 30, 1905, reflects European contemporary society. The American soul of 1905 expressed itself in such songs (which are still favorites today) as "Wait till the sun shines Nellie," and "In the shade of the old apple tree." Among the popular products of the year were those of George M. Cohan, singer-composer: "Mary's a Grand Old Name" and "Give my regards to Broadway." Who would not recall the song written in 1905 by Jimmy Walker, later New York's mayor: "Will you love me in December as You Do in May?"

It was just fifty years ago that Osler left Johns Hopkins and became Regius Professor of medicine at Oxford. The building of Peter Bent Brigham Hospital commenced under the supervision of John Shaw Billings. Various medical societies were founded as the Röntgen Society in Berlin, the Society of Exotic Pathology in Paris, the American Society for Psychic Research, and the American Sociological Society. In Detroit, our own association held its 14th meeting, and urged the reorganization of the Medical Department of the Army.

In 1905 the world of science first began to hear of the relativity principle. The year's outstanding medical discovery was made by Fritz Schaudinn who recognized that syphilis is caused by a spirochete. Bordet and Gengou isolated the bacillus of whooping cough, while many others (Carré, Juliusberg, Hektoen) began to study the pathogenic viruses. Giemsa produced his staining method, and Levaditi found how to impregnate the syphilitic spirochete with silver. The physiolo-

gists became acquainted with parasympathetic functions (Langley), and with a new concept of vitalism (Driesch). Clinicians and pathologists learned new procedures and read of new entities of diseases: exploration of renal function (Albarran), transmission of plague by fleas of rats, Folin's analytic methods, Selig's staircase test for heart function, serum sickness (Pirquet and Schick), adrenogenital syndrome (Bulloch), osteochondritis (König), etc. Ehrlich showed that a transplanted carcinoma could change into sarcoma. Therapy and pharmacology were enriched with new drugs; atoxyl (Thomas), propanol (Fischer), novocaine (Einhorn), stovaine (Chaput), adrenaline for dying heart (Winter), parathyroid extract in tetany (Vassale). Harvey W. Cushing relieved intracranial hemorrhage in a newborn by surgical decompression. Erwin F. Smith commenced to publish his great work on bacteria of plant disease, and Lt. Col. C. E. Woodruff, U. S. Army ethnologist, issued his studies on the effects of tropical light on white man.

Fifty years ago Koch received the medical Nobel Prize, and the Leipzig Institute of Medical History was founded. In this country medical colleges were formed in Indiana, Utah, and North Dakota. Two of our medical journals reach their fiftieth year of existence, the *Journal of Biological Chemistry*, and the *Surgery, Gynecology & Obstetrics*.

Among the distinguished men who died in 1905 we recall the memories of a few. Ernst Abbé (b.1840), mathematician and physicist, made many improvements and gadgets for the microscope. Adolf Bastian (b.1826) was a German ethnologist. Nathan Bozeman (b.1825), American urologist and gynecologist, invented various instruments. Joseph E. Dutton (b.1847) was the first who recognized human trypanosomiasis. Walter Flemming (b.1843) is known by his studies of cell division and karyokinesis. John Hay (b.1838) was Lincoln's private secretary and biographer. Rudolph v. Kölliker (b.1817) became famous as histologist and embryologist, and founder of cellular physiology.

Adolph Menzel (b.1816) was a German illustrator and historical painter. Johann v. Mikulicz-Radecki (b.1850), German surgeon, is perpetuated by a glandular disease and a type of peritoneal drainage. George R. Morehouse (b.1829) described causalgia and studied the injuries of Civil War soldiers. Carl W. H. Nothnagel (b.1841) was clinician and neurologist in Germany. Claude A. Paquelin (b.1836) gave his name to the thermocauter. Henri Parinaud (b.1844), Paris eye doctor, is associated with a type of conjunctivitis. Vilmos Schulek (b.1843), Hungarian ophthalmologist, developed many operative methods. Ivan M. Sechenov (b.1829) is the father of Russian physiology. Charles Smart (b.1841) was Assistant Surgeon General, and epidemiologist in the U. S. Army who contributed much to the advancement of military medicine. Ernst Ziegler (b.1849) gave his name to a currently published magazine of pathological anatomy. Everyone knows the names of the two fiction writers who laid down the pen in 1905: Lewis Wallace (b.1827), American brigadier-general, lawyer, and the celebrated author of *Ben Hur* (1880 ed.), and Jules Verne (b.1828), French author of such delightful mixtures of science and fiction as "*20,000 Leagues under the Sea*," and "*Round the World in 80 Days*."

Thus, we come to the end of our tracing of the past. Should we dare to plot the curve for the New Year? or for the years to come? Is there a trend, and is there a lesson? One does not need to be a Nostradamus to venture a forecast into the future. Change is unceasing, and it is very likely that mankind has a lot to learn before they come at their journey's end (Churchill). Or, as our Poet stated a hundred years ago, the perform'd grow dim, retiring in shadow behind us, and the unperform'd, more gigantic than ever, advance, advance upon us:

"No one knows what will happen next, such portents
fill the days and nights;
Years prophetic! The spaces ahead as I walk, as
I vainly try to pierce it, is full of phantoms,
unborn deeds, things soon to be,
Project their shapes around me. . ." (WALT
WHITMAN)

EDITORIAL

Starting Anew

MILITARY MEDICINE is the new tag of the Association's official journal. It replaces the time-honored label under which the professional achievements, ethical ideas and patriotism of American military surgeons have been imparted to the world over half a century. Some of us, who grew up with the journal and became fond of the green coat of old *Military Surgeon*, may shed a few sentimental tears over the change in title.

But, the change was to come since, during the past fifty years, the Association itself has grown from a sapling into a tall tree with many strong roots which now penetrate into many layers of the American medical and allied professional ground and get their sap from a much broadened area of patriotic scholars. The tall tree is now visible at all points of the earth, and it is more than a mere country roadsign:—it became a global guide-post to be looked at by many nations for direction.

The old beloved signboard of our journal was reminiscent of centuries of military history. The old title had the atmosphere of battles and sieges of the renaissance period. It had the halo of the Parés, the Purmanns, the Wisemans, the Heisters and of other famous surgeons of soldiers. It had the flavor of ancient armies, the smell of antique chronicles, and the forceful language of the Elizabethan period when every medical officer in the Army and Navy was a surgeon. It reflected an early status of military medical service when the essence of the service consisted of stopping the bleeding, dressing and bandaging wounds and injuries, and amputating damaged limbs.

Frankly, there is a faint obsolescence emanating from the words "military surgeon," which is not surprising in the modern

age of specialization when scalpel, splint, catgut and plaster of Paris are invariably associated with the word "surgeon." Hence, physicians in other countries, and even our domestic non-medical confreres, had often mistaken the nature of this journal, while professional bibliographers were wont to list its contents in the class of regular surgical periodicals since in their lay minds the *Military Surgeon's* business could not have been anything else but military surgery. One result of this misconception was that the editor's exchange list of foreign journals by and by grew lopsided since the journal's old title had but little "medical" appeal.

Military Medicine, the new title, is at once closer to modern professional ideals, and nearer to an universal understanding. It is also a fitting banner for an association that, in addition to the health of the armed forces, now embraces also the medical aims and humanitarian purposes of such federal welfare agencies as the Veterans Administration and the Public Health Service.

Skeptical lexicographers might dispute the meaning of the new title of the journal, especially if, for the significance of the words, they would look into the past only. In the modern world and its changed environment, *military* means now much more than just the soldier's things, and *medicine* is way above the level of soothing lotions, wound-dressings and prescription-writing. Our whole modern life is continuous militation, a long chain of defense, and to-day's medicine must take Life's entire biological setting in the world. Hence, military medicine of to-day could mean to us the medical aspect of the overall defense of the many individual lives, integrated into our national life, against a global environmental background.

Thus, the *Military Surgeon* passes into *Military Medicine*. But it changes in name only, not in its aims and spirit. Nevertheless, even by a nominal change a journal's alacrity of will and its liveliness of response to intellectual and moral stimuli is apt to assume the kind of new vigor and ardor that is characteristic to Spring and to all beginnings. In Spring, age-old oaks always put forth fresh branches. When starting anew, one is also ig-

norant of past fatigues and disappointments.

The spirit of mankind moves now amid darkness; its steps falter, and all around lurk international doubts and uncertainties. All the more important becomes the defense of human life. The task of *Military Medicine* is great, and it stands at a new beginning! Let's hope that the journal adds a sparkle of new radiance to the old beam of light to guide humanity through the darkness toward a bright future.



Addressing the Ninth Interagency Institute for Hospital Administrators held at the Walter Reed Army Medical Center, Washington, D.C., November 1-19, 1954, Deputy Navy Surgeon General B. W. Hogan said,

"It is no longer enough that those charged with the responsibility of administering a hospital are medical officers or that they have had a measure of practical experience in the clinical services of a given hospital. In addition it is essential that an administrator have at his command a thorough knowledge of public relations and of effective leadership."

Around the World

By

CLAUDIUS F. MAYER, M.D.

GLOBAL medicine is hard to display in miniature. The surface of the globe and the field of medicine are too large areas for small-scale representation. The medical problems that concern mankind as a whole are too gigantic, and the regional and local conditions that are sufficiently important and vital to interest the rest of the world are too many. There are many fronts in our terrestrial environment where the defense of health is progressing AROUND THE WORLD. We aim to keep up with the progress, and to show its main trend by the short communiqués of this column which are prepared from currently published medical reports on Man's fight with his environment.

For the study and analysis of this fight, an American public health authority, at his lecture in London, suggested the application of the research methods of epidemiology. After all, health and disease are equally the results of an ecological process. Why couldn't they be studied by the same method? This concept of an *epidemiology of health* (Gordon) was born from many studies of whole populations and of various aspects of community life.

What epidemiological research could accomplish was shown by recent African studies which assert that *yellow fever is still endemic in Africa* where it constitutes a grave threat to the rest of the world. At a seminar, held a year ago at Kampala, Uganda, it was proved that the epidemiology of yellow fever might differ considerably according to continents and local areas; thus, Cape Verde and Kenya are spared by the disease in Africa. The method of control remains that which U. S. Army officers had taught the world at the turn of the century. Yet, since control of the sylvan (jungle) fever by insecticides is incomplete, mass immunization of the threatened population

is the only sure weapon. The studies also showed that the endemicity of yellow fever in Africa probably depends upon an *unknown cycle of viral* development.

A series of observations indicated that since November 1948 an epizootic wave of *jungle yellow fever* had been moving from eastern Panama toward Mexico. According to recent studies (Col. Eaton) the wave has already reached the northern coast of *Honduras*, and, by July this year, the spearhead may arrive at Guatemala. Though the disease takes its victims chiefly among the monkeys of the jungle, sporadic human cases are also known. It is difficult to deal with the disease since the affected countries are very reluctant to be considered as areas of yellow fever.

Asia remains the trouble center, not only on the political but also on the medical map of the world. Its importance for the defense of the Pacific is now undoubted. The late pacts and treaties (ANZUS, SEATO) and the existing regional alliances have brought together the highly developed western civilizations with the backwardness of Asia. These contacts showed up many defects, as for instance the *Southeast Asian shortage of doctors*. This problem could be solved by the establishment of medical schools only. New schools had been already erected in Burma, Ceylon, India, Indonesia, and Thailand, yet it is hard to recruit proper teaching staff, and 15 to 20 years are required to train a senior native teacher of proper standing. Basic sciences do not attract many teachers, and hence research is at its lowest. Most schools *follow a foreign pattern*, though each Asian country should orient its medical school to its own needs. A curriculum of 7 years is surely impractical in a country which is in dire need of doctors. Under such conditions what good could be expected from the establishment of "medical manpower commissions?"

Formosa (or Taiwan) is in need of nurs-

ing schools. Though four schools are now active, the nurses are still few in number; textbooks of nursing are also in shortage. WHO and a native organization are eager to promote nursing education. The island is now overpopulated. Its birthrate (1952) was 46.6, and its deathrate 9.9 per 1,000 inhabitants (Cf. U.S. figures: birthrate 24.7; deaths 9.6). Last November, Formosa was the host of the *malaria conference* for the Western Pacific and Southeast Asia regions. The anopheline vectors, their control by residual insecticide spraying, and the coordination of national malaria programs were discussed. Ultimately, spraying is to be discontinued. It is a costly enterprise since the mudwall of rural huts absorbs the drug into its depth, and then the wall surface loses its mosquito-killing potency.

Many medical and scientific *congresses* will be held *this year in Lima, Peru*. The Interamerican Section of the American College of Surgeons (Jan. 11-14) congregates at the Universidad Mayor de San Marcos of Lima. Next month, a congress of physical medicine, and another of general practice will have sessions in the old town of the Incas. The Lima University is so crowded now with medical students that new matriculations had to be limited to 150 students yearly. The *numerus clausus* forces the rest of the youngsters to go abroad for their medical education. The erection of another medical school at Arequipa is now planned.

English doctors are very much annoyed by the recent directives issued by the Ministry of Health since the orders seem to violate the old adage that a man's house (office, in this instance) is his castle. First, a directive had pointed at the evil that resulted when patients, before being seen by a doctor, had to wait for hours in the outpatient wards and the private offices which are at a far cry from the luxuries of their American equivalents. They are indeed so dull that the *British Medical Association* found it necessary to start a campaign of its own to *brighten the bleak anterooms* and to cheer up the disheartened waiting patients.

But to top it all, the Ministry now toys with a new proposal that the "surgeries" ("offices," to us) of private doctors should be inspected regularly, and the non-cooperants should be fined. *Compulsory inspection* after compulsory health insurance! A lot of British colleagues are distressed, and some consider the new deal "one more nail in the coffin of freedom."

Various American interests keep small *Jugoslavia* in the foreground of the theater of history. Though under communist dictatorship, this country has been outside the Russian orbit since 1949. Its well-organized Army of 600,000 men has demonstrated excellent fighting qualities, which makes them valuable members of the Balkan Pact (concluded with Greece and Turkey in August). Its internal economic and political situation is mostly misconceived by the casual Western traveler. Science and medical research are chiefly concentrated in the two big cities, Beograd and Zagreb.

The military medical journal (*Vojnosanitetski pregled*) and other publications show that the *Jugoslav military surgeons* are mostly interested in practical subjects. In technic they approach western perfection. For instance, the operative statistics of antethoracic esophago-jejunoplasty, recently published by a surgeon of the Yugoslav Army Medical Service (Col. Papo), compare favorably with western success. Just a year ago Jugoslavia prepared a splendid textbook of military surgery ("*Ratna hirurgija*," 2v. Beograd, 1953). The work is an uncontested document not only of the high quality of Jugoslav military medicine but also of the freedom in scientific research so rarely seen in countries of communist domination (N.B. A detailed account of the "*Ratna hirurgija*" for our journal is now in preparation).

A timely essay in the British Med. Journal (Aug. 21, by Asher) deals with "*Straight and Crooked Thinking in Medicine*." We are not surprised to read that there are many possible dishonest tricks of argument; that one of the commonest of them in medicine comes from overclassification; that facts are

often forced into compartments where they don't fit. Much crooked thinking results also from *crooked statistical interpretation* of the numerically correct records. Crooked thoughts also originate from the use of hazy words, says the author.

Talking of hazy words reminds us of the difficulties in *medical nomenclature* when obscure new diseases are in search of a name. The neurosis, known as manager's disease now has a new label, *contractor's disease* (Hochrein, 1953). The mysterious winter epidemic which since 1938 has been returning to girls' schools in England and the Faroe Islands still has its hazy name, *epidemic vomiting*. Likewise, the strange ailment that periodically affects the North African Jews

is still called *periodic disease* (Reimann, 1948). And the American epidemic whose favorites are college students and young nurses (who have tried to cure it by ACTH but in vain), is still called by the meaningless term of *phlebodynia*.

What to do for retiring Surgeon-Generals is the question. Here is an answer! It happened in Ireland where *Surg. Gen. J. E. Moffatt* (1826-1912), after retiring on full military pension, finished up his unique career in the *Holy Orders*, as a memorial tablet perpetuates his life on the walls of a church near Dublin. An autumn leaf of a British medical service journal has just recalled the affectionate memory of the REV-EREND GENERAL. . . . *Multa paucis!*

NINTH INTERAGENCY INSTITUTE

WALTER REED ARMY MEDICAL CENTER, NOVEMBER 1-19, 1954



Army Photo

Seated (left to right)—Mr. Fred A. McNamara (Bur. of Budget); Maj. Gen. Wm. Powell, USAF, (MC); Maj. Gen. S. B. Hays, MC, USA; RAdm. O. B. Morrison, MC, USN; Dr. L. A. Scheele, USPHS; Mr. Donald Belcher (Bur. of Budget); Dr. Roy Wolford, Vet. Adm.; RAdm. B. Hogan, MC, USN; Dr. Frank Shaw (Bur. Ind. Aff.); Col. Kermit Gates, MC, USA. *Standing (left to right)*—Col. H. C. Knapp, USAF, (MC); Mr. A. W. Woolford, Vet. Adm.; Col. L. K. Pohl, USAF, (MC); Col. F. W. Regnier, MC, USA; Dr. D. J. Zaugg, USPHS; Col. D. E. Carle, MC, USA; Mr. D. S. Slade, Vet. Adm.; Dr. E. M. Tapp, Vet. Adm.; Dr. M. A. Diamond, USPHS; Col. H. F. Currie, USAF, (MC); Mr. P. M. Hutchinson (Bur. Ind. Aff.); Col. A. Czerwinski, USAF, (MC); Dr. A. E. Maniscalco, Vet. Adm.; Dr. F. S. French (Bur. Ind. Aff.); Mr. G. R. Hiskey, Vet. Adm.; Capt. L. A. Newton, MC, USN; Col. J. H. Turner, MC, USA; Col. B. L. Steger, MC, USA, (Director); Mr. H. O. Duncan, Vet. Adm.; Dr. J. I. Fitzsimmons, Vet. Adm.; Col. J. J. Jacobs, USAF, (MC); Col. C. O. Bruce, MC, USA; Mr. C. J. Ping, Vet. Adm.; Col. R. K. Charles, Jr., MC, USA; Dr. H. C. Managh, Vet. Adm.; Col. J. G. Moore, USAF, (MC); Capt. O. E. Van Der Aue, MC, USN; Capt. Fitz-John Weddell, Jr., MC, USN; Capt. M. K. Cureton, MC, USN; Dr. J. S. Knox (Bur. Ind. Aff.); Col. J. B. Dismukes, MC, USA; Dr. O. N. Shelton, Vet. Adm.; Dr. R. H. Kaplan, Vet. Adm.; Capt. C. G. Grazier, MC, USN; Dr. G. L. Wadsworth, Vet. Adm.; Dr. J. B. McHugh, Vet. Adm.; Capt. J. V. Land, MC, USN.

SUSTAINING MEMBERS

ASTRA PHARMACEUTICAL PRODUCTS, INC.
BAXTER LABORATORIES, INC.
BECTON, DICKINSON AND COMPANY
BISHOP, J., & CO. PLATINUM WORKS—MEDICAL PRODUCTS DIVISION
BURROUGHS WELLCOME & CO. (U.S.A.) INC.
CIBA PHARMACEUTICAL PRODUCTS, INC.
COOK-WAITE LABORATORIES, INC.
CORNING GLASS WORKS
EATON LABORATORIES, DIVISION OF THE NORWICH PHARMACAL CO.
GENERAL ELECTRIC COMPANY
GRASS INSTRUMENT COMPANY
HOFFMANN-LA ROCHE, INC.
HYLAND LABORATORIES
JOHNSON & JOHNSON
MERCK & CO., INC.
ORTHOPEDIC EQUIPMENT COMPANY
PARKE, DAVIS & COMPANY
PFIZER, CHAS. & CO., INC.
PICKER X-RAY CORPORATION
PROFEXRAY, INCORPORATED
RITTER COMPANY, INC.
SEARLE, G. D., & CO.
SQUIBB, E. R., & SONS, DIVISION OF OLIN MATHIESON CHEMICAL CORP.
STEPHENSON CORPORATION
STERILON CORPORATION
WINTHROP-STEARN'S INC.
WYETH LABORATORIES



ASSOCIATION NOTES

Timely items of general interest are accepted for these columns. Deadline is 3d of month preceding month of issue.

Department of Defense

Ass't Secretary (Health & Medical)—HON. FRANK B. BERRY, M.D.

Executive Ass't—COL. SHELDON S. BROWNTON, USAF (MC)

DOCTOR DRAFT

The Doctor Draft Act will expire on June 30, 1955 unless extended by Congress. It is unlikely that such extension will be enacted.

The termination of this Act will bring with it the elimination of the \$100 per month equalization pay for doctors and dentists. The equalization pay will probably be a separate issue as there is good basis for its extension to career medical and dental officers after a two-year period of service.

Medical and dental personnel under 35 years of age and without prior military service will fall under the Selective Service requirements of two years military service. The Services will not be obligated to grant commissions to persons reluctant to apply for commissions. It is improbable that the \$100 will be granted for these two years of service.

KOREAN BATTLE CASUALTIES

The total of Korean battle casualties as of September 30, 1954 was 142,091 and includes: deaths, 33,629; wounded, 103,284; reported captured or missing but returned to military control, 5,133; refused repatriation, 21; missing, 24.

MOTION SICKNESS STUDY

Dr. Herman I. Chinn of the Air Force

School of Aviation Medicine, Randolph Field, Texas, and a group of Armed Forces specialists are on the high seas to learn more about drugs for motion sickness. Some 10,000 volunteers will participate in the clinical investigation of drugs for the annoying illness—mal de mer.

COCO SOLO HOSPITAL TAKES OVER

Colon Hospital has ceased to operate as a hospital at the Atlantic end of the Panama Canal. Thus a period of fifty years service has been ended. The hospital facilities will now be provided in this area by the Coco Solo Hospital, formerly under the Navy, but now to be operated as a part of the Canal Zone Government.

Army

Surgeon General—MAJ. GEN. GEORGE E. ARMSTRONG

Deputy Surg. Gen.—MAJ. GEN. SILAS B. HAYS

ASS'T COMMANDANT, AMSGS

Colonel Robert L. Hullinghorst has been appointed as Assistant Commandant of the Army Medical Service Graduate School, Walter Reed Army Medical Center.

AWARDED "A" PREFIX TO MOS

Colonel Lynn C. Dirksen, DC, Walter Reed Army Medical Center has been awarded the "A" prefix to his military occupational specialty number in the field of prosthodontia. The "A" prefix is reserved for medical, dental, and veterinary officers demonstrating outstanding qualifications and teaching proficiency in a specialty field.

Colonel Dirksen served as an associate professor of prosthetic dentistry at the University of Iowa from July 1945 to July 1946.

CONTRIBUTION CAMPAIGN-WRAMC

The Walter Reed Army Medical Center conducts an Annual Contribution Campaign. From the fund raised disbursements are made to eleven charitable organizations. This year the annual drive at the Center brought \$17,000 from military and civilian personnel.

LEGION OF MERIT AWARD

Recently Captain Jerry W. Barton, Property Officer with the Medical Training Center, Fort Sam Houston, Texas, received the Legion of Merit for World War II service, while then a member of the Texas National Guard 143rd Infantry Regiment. The presentation was made by Brig. General L. Holmes Ginn, Jr., commander of the Medical Training Center.

MFSS NEWS

Lt. Colonel Gerard J. Sheehan has recently been appointed the executive officer of the Medical Field Service School, Fort Sam Houston, Texas.

Colonel Sheehan has been at Brooke Army Medical Center since 1952 as chief of the Legal Assistance Office and chief of the Inspection Office of the School.

CHIEF, OCCUPATIONAL THERAPY SECTION

Captain Winifred E. Soady, WMSC, has been appointed as chief of the Occupational Therapy Section of the Brooke Army Hospital, Fort Sam Houston, Texas. She has been with the Army since 1944.

FRAMES FOR EYE GLASSES WANTED

If you have any old frames for eye glasses send them to the Adjutant, Brooke Army Hospital, Fort Sam Houston, Texas. They most likely can be used in the charity clinic at the Robert B. Green Eye Clinic.

CO—24TH EVAC. HOSP.

Lt. Colonel Wade. F. Heritage has been named commanding officer of the 24th Evacuation Hospital at Fort Benning, Georgia.

Colonel Heritage saw service in Japan as

commanding officer of the 161st Station Hospital at Sapporo, and later as surgeon of the 24th Infantry Division. He was with that division when it was precipitated into the Korean activities in July 1950.

BELGIAN NURSE DECORATED

Captain Marthe Debackere of the Belgian Army Medical Service was awarded the Bronze Star Medal at ceremonies held at the Tokyo Army Hospital, Japan, where she is on duty as United Nations nurse and Belgian Medical Liaison officer. Major General Earle Standlee, Chief Surgeon, United States Army Forces, Far East, presided at the ceremony.

The citation mentioned her selfless devotion to the seriously wounded and injured patients in the neuro-surgical ward and pointed out that she had consistently maintained smooth and efficient liaison between the hospital, Belgian patients and government representatives.

TRANSFERS OF MEDICAL SERVICE OFFICERS

Applications for transfer to Department of the Navy or the Department of the Air Force made by commissioned officers of the Medical Service of the Army must arrive in the Adjutant General's Office of the Army no later than May 1, 1955. Army Regulations 618-118, dated October 14, 1954 should be followed in preparing the applications.

CORRECT TERMS TO USE

Officially it is "USAR," not "ORC," "Reserve components," not "civilian components." "Regular Army" is used to refer to individuals in a regular status, while "Active Army" refers to the full-time Army establishment. Incidentally the full-time Army establishment contains less regulars than members of other components.

ARMY REGULATIONS TO INCLUDE ALL SPECIAL REGULATIONS

A consolidation of Army Regulations and Special Regulations into one medium—Army Regulations, will be effected soon by the

Army. The announcement comes following a complete review and analysis of procedures pertaining to the publication and distribution of administrative regulations. The consolidation will be accomplished as the regulations are changed, revised, or rewritten, a continual process in the Army as all Reservists know.

Regulations will be distributed on a "need to know" basis with the first changes in AG distribution having gone into effect in October. Particular reference will be made to the requirements of companies, battalions and units of comparable size and responsibility.

A second change to be effected will be the manner in which the regulations are written. The adoption of a standard sequence of writing, wherein instructions applicable to the lowest level of command will follow immediately after the index and introduction. Instructions to higher levels of command will follow in sequence from battalion to regiment to division, etc. This will make it possible for small unit commanders to discover the action required of them without reading voluminous instructions that do not apply in their case.

In a third change to present procedures, extracts of lengthy publications will be published for distribution to lower levels of command, in cases where only a small portion of the regulation is required at that level.

ARMY RESERVIST

A new publication which is a part of the Army general information program appeared as the "Army Reservist" in November. It will attempt to cover all developments concerning the Army Reserve, and news of tactical or technical nature the knowledge of which is apt to improve the strength of reserve units. Matters for the editor can be addressed to him at the Office of the Executive for Reserve and ROTC Affairs, Dep't of the Army, The Pentagon, Washington 25, D.C.

RESERVE OFFICER PERSONNEL ACT

On July 1, 1955 the new Reserve Officer

Personnel Act becomes law and, while major provisions of the act will go into effect at that time, a transition period of five years is allowed in which to implement all procedures of the law. The bill provides statutory promotion procedures for all Reservists in an active status.

The Act is intended to stimulate interest in the Reserve program and emphasizes the importance to the national-security program of the Reserve system. It is believed that it will assist in providing a younger and more efficient officer structure for the Reserve program.

The measure not only provides for the promotion of Reserve Officers but also provides statutory means of eliminating officers who fail to meet promotion standards.

The minimum amount of service in each grade for consideration for promotion is specified as follows:

Grade	Yrs. in Grade
1st Lt.	2
Capt.	4
Major	4
Lt. Col.	3
Colonel	2
Brig. Gen.	2

RESERVISTS ANNUAL REPORT

A new form, DA Form 1140, containing 11 questions for Reservists to answer, instead of the former 39 for officers will be mailed to them directly from the headquarters of the continental Army in whose area they are located.

The form must be filled out each year so that the Army can keep up to date on the status of its Reservists.

Navy

Surgeon General—REAR ADM. LAMONT PUGH

Deputy Surg. Gen.—REAR ADM. BARTHOLOMEW W. HOGAN

SURGEON GENERAL TO RETIRE

Rear Admiral Lamont Pugh, Surgeon

General of the Navy, will complete his term of office at the end of January.

Admiral Pugh is the twenty-fifth Chief of the Bureau of Medicine and Surgery and the twenty-first to hold the title of Surgeon General of the Navy. He was nominated to that office by President Truman and the nomination was confirmed by the Senate to date from January 27, 1951.

Prior to the position of Surgeon General



Navy Photo

RADM LAMONT PUGH, MC, USN

Admiral Pugh served as Deputy Surgeon General. He is the second surgeon general appointed from the position of deputy.

Admiral Pugh is a native of Virginia having been born in Albemarle County on February 5, 1895.

His military career started as a private in the Marine Corps in June 1917. At the end of World War I he was in the Officers' Training School at Quantico, Virginia.

On return to civilian life in 1919 Admiral Pugh won the Herndon Scholarship in the Department of Medicine at the University of Virginia and received his medical degree

in 1923. In June of that year he was commissioned in the Medical Corps of the Navy. On December 2, 1946 he was appointed Deputy Surgeon General with the rank of Rear Admiral.

Admiral Pugh is a Fellow of the American College of Surgeons and the American Surgical Association; a member of the American Board of Surgery, the American Board of Preventive Medicine and Public Health, the American Medical Association, the Association of Military Surgeons; and a Fellow in the American College of Physicians. He holds Honorary Fellowships in many other medical organizations. He is the recipient of the Honorary Degree of Doctor of Laws from Wagner College.

Admiral Pugh's permanent home and official address is Crozet, Virginia.

PERSONAL

Captain Charles J. Schork, DC, USN, on duty at the Naval Air Station, Pensacola, Florida, has recently been elected to membership in the American Society of Oral Surgeons.

DENTAL TECHNICIAN SHORTAGE

There is a shortage of dental technicians in the Navy, and in many dental clinics this shortage is an acute one. This situation has come about because of the cutback in training of the technicians, which in turn was caused by the planned reduction in the Navy. It is hoped that by spring the situation will be partially remedied by training courses now under way.

Air Force

Surgeon General—MAJ. GEN. DAN C. OGLE
Deputy Surg. Gen.—MAJ. GEN. W. H. POWELL, JR.

DIRECTOR OF RESEARCH

Colonel Henry M. Sweeney has been appointed Director of Research at the School of Aviation Medicine, Randolph Field, Texas. He will supervise all the research activities of the twenty medical departments of the School.

Colonel Sweeney is a native of Iowa, and received his B.S. degree from the Iowa State College in 1929, and his M.A. degree the following year. His Ph.D. was awarded him in physiology by Tulane University Medical School, where until 1937 he was assistant professor of physiology. In that year he became head of the Department of Physiology and Pharmacology at the University of South Dakota.

In 1942 Colonel Sweeney began his military service in the Field Artillery but soon his experience in the field of physiology brought him to the Air Force where he has aided in solving the many problems concerned with high altitude flying and the jet plane. He has gained recognition for his work in the development of the automatic ejection seat for jet pilots.

Public Health Service

Surgeon General—LEONARD A. SCHEELLE, M.D.

Deputy Surg. Gen.—W. PALMER DEERING, M.D.

APPOINTMENTS

Dr. Henry A. Imus has been named Assistant to the Director of the National Institute of Neurological Diseases and Blindness, National Institutes of Health, Bethesda, Maryland.

Dr. Imus is a native of Holland, Michigan. He has done postgraduate work at Harvard University and has received his Ph.D. from Dartmouth Medical School.

Dr. Nancy Bayley has been named chief of the Section on Developmental Psychology, National Institute of Mental Health. She is recognized as a national authority on mental growth during infancy and childhood.

Dr. Bayley is past president of the Western Psychological Association and of the Division on Developmental Psychology of the American Psychological Association.

Dr. Detlev W. Bronk, President of the Rockefeller Institute for Medical Research

has been appointed to the National Advisory Health Council.

Dr. Bronk, one of the Nation's leading scientists and former President of Johns Hopkins University, has held many posts in recent years as adviser to scientific societies and governmental commissions. As a member of the National Advisory Health Council, he will advise and make recommendations to the Surgeon General regarding grant activities of the National Microbiological Institute, one of the seven National Institutes of Health, main research arm of the Public Health Service.

Dr. John C. Whitehorn, Henry Phipps Professor and Director of the Department of Psychiatry at the Johns Hopkins University in Baltimore, will serve on the National Advisory Mental Health Council.

As a member of the National Advisory Mental Health Council, Dr. Whitehorn will advise and make recommendations to the Surgeon General regarding activities of the National Institute of Mental Health, Bethesda, Maryland. This is one of the seven National Institutes of Health, main research arm of the Public Health Service.

Dr. Irving S. Wright of New York City, Professor of Clinical Medicine at Cornell University Medical College and Attending Physician at New York Hospital, has been appointed to serve on the National Advisory Heart Council.

Dr. Wright, President of the American Heart Association during the 1952-53 term, was Chairman of the First National Cerebral Vascular Conference of the American Heart Association held this year in Princeton, New Jersey. As a clinician, author and editor, he has had wide experience in the field of heart and blood vessel diseases, and is author of a number of scientific publications and co-author of the popular lay booklet, "You and Your Heart."

EXPANSION OF COMMISSIONED RESERVE

Surgeon General Leonard A. Scheele has announced a major expansion and reorganization of the Commissioned Reserve of the

Public Health Service. The Service expects to commission an additional 2,000 reserve officers by June 30, 1955 and present plans call for commissioning of another 3,000 officers during the 1955-56 fiscal year.

The emphasis initially will be on the commissioning of physicians, dentists, sanitary engineers, and nurses.

DENTAL OFFICER EXAMINATION

A competitive examination for appointment of Dental officers in the Regular Corps of the Public Health Service will be held on March 15, 16, 17, and 18, 1955 at a number of points throughout the United States. Applications must be received in the Division of Personnel, Public Health Service, Department of Health, Education, and Welfare, Washington 25, D.C., by February 9, 1955. A special application form is required. It may be obtained from the same office.

CHEMOTHERAPY COMMITTEE ON CANCER

A committee on chemotherapy of cancer has been formed for the purpose of the exchange of information in this field of medical research. All investigators interested in cancer chemotherapy are invited to take part in the program. Those interested should contact Dr. Gordon Segar, Secretary, Cancer Chemotherapy Committee, National Cancer Institute, Bethesda 14, Md.

POSTGRADUATE COURSE IN VD

From January 31 through February 4, 1955 the 23rd Venereal Disease Postgraduate Course will be given at Tulane Medical School, New Orleans, La.

This course is co-sponsored by the Division of Graduate Medicine of Tulane University and the Public Health Service. There is no tuition for the course which is designed to acquaint the practitioner with the latest developments in diagnosis, treatment and management of venereal diseases.

Applications should be made immediately to Dr. Clifford Grulee, Jr., Director, Division of Graduate Medicine, Tulane University, 1430 Tulane Avenue, New Orleans, La.

Veterans Administration

Chief Medical Director—VICE ADM. JOEL T. BOONE (MC), USN, Ret.

Deputy Chief Med. Dir.—R. A. WOLFORD, M.D.

HOSPITAL MANAGERS

Dr. Henry Luidens has been named to be manager of the hospital at Coatesville, Pa. He succeeds Dr. Hugo Mella, who recently retired.

John V. Therrell has been appointed manager of the hospital in Rutland Heights, Mass. He succeeds Dr. Theodore R. Dayton, who recently went to the Baltimore, Md. hospital.

Samuel H. Franks, has been named as manager of the Oakland, Calif. hospital. He previously was the assistant manager.

Willis O. Underwood has been appointed as manager of the VA Hospital at Sunmount, N.Y.

Ira G. Sims, presently assistant manager of the hospital in Alexandria, La. will become the manager of the hospital at Big Springs, Tex.

Abe A. Bolotin has become manager of the hospital at Grand Junction, Colo.

GI BILL TRAINEES

On November 1, 1954 there were 451,000 trainees under the Korean GI Bill, of whom more than half were attending college. The rest were training in below-college level schools, on-the-job and on-the-farm.

At the same time there were only 168,000 trainees under the World II program. The time, of course, has expired under which veterans can enroll under that program, unless they were disabled to such an extent that training was precluded.

Miscellaneous

C.P.H.V. ELECTS 1954-55

The Conference of Public Health Veterinarians has elected the following officers: Brig. Gen. Wayne O. Kester, USAF, president; Dr. Raymond J. Helvig,

USPHS, president-elect; Dr. James Lieberman, USPHS, secretary-treasurer.

The Executive Board consists of the officers and Dr. E. R. Price, Missouri; Col. Philip E. Carter, U. S. Army; Dr. James E. Scatterday, Florida; and Dr. Ben H. Dean, California.

SCHOLARSHIP PROGRAM

Public Health Scholarships have been announced by the Harvard School of Public Health for the Academic Year 1955-56. These scholarships will be awarded to persons of high professional promise and will range from part tuition to tuition plus a stipend according to the qualifications and the financial needs of the applicants.

Scholarship applicants must be eligible for admission to the School as a candidate for one of the following degrees: Master of Public Health, Doctor of Public Health, Master of Science in Hygiene, Doctor of Science in Hygiene, Master of Industrial Health.

The Scholarships are available to the following: physicians, dentists and veterinarians, public health nurses, social workers, health educators, college graduates who have concentrated in one of the Natural Sciences or in Engineering.

Further information can be obtained from the Secretary, Harvard School of Public Health, 55 Shattuck Street, Boston 15, Mass. The deadline for filing applications is March 1, 1955.

REHABILITATION TRAINING PROGRAM

A training program for Rehabilitation Center Directors or Administrators will be held at the Institute for the Crippled and Disabled, New York City. While the date announced is January 1, 1955 it may have to be postponed until February 1 so those interested may still have an opportunity to apply.

Men and women, not less than 30 years of age, with a B.S. degree and three years experience in rehabilitation may apply. There is a stipend of \$250 per month for those accepted. Further information can be obtained

from: The Director, Institute for the Crippled and Disabled, 400 First Ave., New York 10, N.Y.

UNDERGRADUATE MEDICAL STUDENT CONTEST

The American College of Chest Physicians is offering three cash awards to be given annually for the best contribution, prepared by any undergraduate medical student, studying for a degree in medicine, on any phase of the diagnosis and treatment of chest diseases (heart or lungs). The prizes are \$250, \$100, and \$50 respectively.

Further information can be obtained from the Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois. The contest closes April 10, 1955.

MILITARY PHARMACY

Several resolutions of the 1954 annual meeting of the American Pharmaceutical Association concern the status of pharmacy and pharmacists in the Armed Forces. The Association suggested that the status of pharmacy in the larger hospitals of the Army, Navy, and Air Force be raised to that of a Division of a Service. It also expressed the desire of pharmacists to have general and flag officers as heads of the three Medical Service Corps.

Another resolution of the APA recommends that all pharmaceutical work in the military services should be assigned to commissioned pharmacists.

CHEST PHYSICIANS MEETING

The 21st Annual Meeting of the American College of Chest Physicians will be held in Atlantic City, N.J., June 2-5, 1955. The Headquarters of the College is at 112 East Chestnut St., Chicago 11, Ill.

MEDICAL RECORD LIBRARIANS MEETING

The American Association of Medical Record Librarians will meet at the LaSalle Hotel, Chicago, Illinois, October 3-7, 1955. The address of the headquarters is 510 North Dearborn Street, Chicago 10, Ill.

TUBERCULOSIS

The Tuberculosis Research Office of the World Health Organization with offices in Copenhagen, Denmark, has assumed responsibility for the International Tuberculosis Campaign. The importance of such a campaign is recognized when the widespread incidence of tuberculosis is realized. The high mortality rates in some countries should suggest to us the real incidence of tuberculosis in that country. It is reported that the mortality rate for this disease in India is 300 per 100,000; in England and Wales, 30 per 100,000; in Denmark, 12 per 100,000; these figures to be compared to the United States—12.5 per 100,000.

The International Campaign involves the tuberculin testing of individuals and the administration of BCG vaccine, which totals now in the millions. Vaccination is only one phase of the fight against tuberculosis and its efficacy is still in question.

Dr. E. Berthet of the World Health Organization puts it thus: "TB is certainly a social disease in relation with the standard of living of the population and its eradication depends on the improvement of the human condition.

"The real prevention of TB does not consist only in systematic radiological examinations and construction of sanatoria but also and even chiefly, in providing human beings with healthy houses, sufficient diet and decent standards of living."

DIELDRIN

An insecticide, more potent than DDT,

known as Dieldrin, is receiving a test in the Philippines. A longer residual period is claimed when sprayed on the walls of houses. It is said to be harmless to humans and the quarters can be re-occupied immediately after spraying.

SUGGESTED ORDINANCE AVAILABLE

The National Board of Fire Underwriters has announced the publication of a new edition of its "Suggested Ordinance on Nursing, Convalescent and Old Age Homes." The revision brings up to date the suggested ordinance first published by the National Board in 1945.

It is recommended for adoption by municipalities and may also be used as a basis for state or county regulations.

To obtain a copy of this "Suggested Ordinance on Nursing, Convalescent and Old Age Homes," write to the engineering department, National Board of Fire Underwriters, 85 John Street, New York 38, N.Y.

Honor Roll

The following sent in one or more new members since the publication of our last list:

Phar. Dir. Geo. F. Archambault, USPHS
 Dr. James C. Chapman
 Lt. W. D. Hann, MSC, DCNG
 Major A. E. A. Hudson, MSC, USAR
 Lt. H. H. Kesten, MC, CAP
 Miss Dorothy D. Rouse
 Phar. Dir. Milton W. Skolaut, USPHS



O B I T U A R I E S

Lt. Colonel Carl Darnall, U. S. Army, Ret.

Carl Robert Darnall, Lt. Colonel, U. S. Army, retired, died on November 7, 1954 at his home in Neosho, Missouri.

Colonel Darnall was born in Washington, D.C. on June 7, 1904. He was the son of the late Brig. Gen. Carl Rogers Darnall, medical author, discoverer of water purification by liquid chlorine, and water filter inventor. Colonel Darnall received his medical degree from the Jefferson Medical College of Philadelphia in 1932, and then accepted a twelve-month internship at the Letterman Army Hospital in San Francisco, and then was commissioned in the Army Medical Corps. During World War II he served in England. In 1949 he transferred to the Air Force Medical Corps, and at the outbreak of the Korean hostilities he entered into combat missions as early as June 28, 1950. He voluntarily flew numerous combat missions in order to gain first hand knowledge of combat stress. In 1951 Colonel Darnall transferred back to the Army. At the time of his retirement, October 31, 1954 he was commanding officer of the hospital at Camp Crowder, Missouri.

Colonel Darnall is survived by his wife, five children, and a brother, Joseph Darnall, MC (ret.) of Austin, Texas. Interment was at Arlington Cemetery.

Ass't Surg. Gen'l Lewis R. Thompson, USPHS, Ret.

Lewis Ryers Thompson, former Assistant Surgeon General of the United States Public Health Service died at the Public Health Service Hospital in Baltimore, Maryland on November 12, 1954 at the age of 71.

Dr. Thompson was born in Lafayette, Indiana August 6, 1883. He received his medical degree from the Louisville Medical College in 1905. His first professional position was as a member of the Philippine Constabulary from 1906 to 1909. In 1910 he joined the Public Health Service as an Assistant Surgeon, and was appointed Assistant Surgeon General in that service in 1930, a position which he held for sixteen years. From 1943 and until his retirement on November 1, 1946 Dr. Thompson served as Associate Chief and Chief of the Bureau of State Services.

Dr. Thompson was an organizer of the National Institutes of Health, and was Director from 1937 to 1942. He was the author of numerous articles and bulletins on medical and public health subjects. In 1945 and 1946 he was one of the Medical Directors and Chief of the Medical Division of the U. S. Strategic Bombing Survey in Japan.

Dr. Thompson is survived by his wife and two children. They reside at 3917 Virgilla Street, Chevy Chase, Md. Interment was at Arlington Cemetery.



BOOK REVIEWS

PARKINSONISM AND ITS TREATMENT. By Lewis J. Doshay, M.D., M.A., Ph.D., Department of Neurology, College of Physicians and Surgeons, Columbia University. J. B. Lippincott Company, Philadelphia, 1954. Price \$3.00

This 152 page booklet is a succinct, practical compendium of the current opinions concerning paralysis agitans. Its purpose is to present the subject in a form useful in clinical practice for medical students and practicing physicians, and it would seem to have fulfilled its purpose quite well.

The anatomy, etiology, pathology, symptomatology, drug therapy, physical therapy, psychotherapy and surgical therapy of Parkinsonism is discussed in the several chapters, and with each there is a good current bibliography. It is stressed that the exact pathogenesis of the three types idiopathic, post-encephalitic, and arteriosclerotic, is not known. It is also pointed out, with a realistic but yet hopeful attitude by the authors, that while there is admittedly much yet to be discovered concerning the basic causes, histologic nature, and treatment of the disease, yet the outlook for patients afflicted with the disease is gradually improving because of improvements in drug therapy, psychotherapy, and the application of the various forms of physical medicine. There is a good summary of the now available more effective drugs which can be used with at least fair symptomatic benefit in Parkinsonism.

COL. JOHN MARTIN, M.C., U.S.A.

HEART DISEASE AND INDUSTRY. By Meyer Texon, M.D., 324 pages. Grune & Stratton, New York, 1954. Price \$7.50

This is the first comprehensive study of the medico-legal aspects of heart disease. One hundred cases of heart disease are analyzed in relationship to industrial accidents. Problems involved in each case, the differential diagnosis, causal relationships, etc., are ably discussed. These analyses provide a guide for the physician who attempts to evaluate similar cases and may aid in the just protection of the patient as well as in fair play for the insurance company. Such a study may well

help lead to uniformity in the law as well as in the interpretation of such laws.

COL. ROBERT E. BLOUNT,
M.C., U.S.A.

INTERPRETING SOCIAL CHANGE IN AMERICA. By Norman F. Washburne.

SOCIAL PLANNING IN AMERICA. By Joseph S. Himes. Two of the planned fourteen publications in Doubleday Short Studies in Sociology.

THE SOCIAL BACKGROUND OF POLITICAL DECISION-MAKERS. By Donald R. Mathews. One of the planned nineteen publications in Doubleday Short Studies in Political Science.

NATURE AND NURTURE. By John L. Fuller.
FEELINGS AND EMOTIONS. By Lawrence K. Frank. Two of the fifteen planned publications in Doubleday Papers in Psychology. New York, Doubleday and Company, Inc., 1954.

The publications are priced at no more than \$1.00 each. Subscription for the series may be entered and each study or paper will be sent on approval as soon as it is published.

The general reader will find these studies and papers appropriate as an introduction and dynamic review of the major topics in the fields of sociology, political science, and psychology. The publisher's main purpose was to "introduce an unprecedented element of flexibility in textbook publication." Each study and paper "treats systematically and with concrete illustration a particular phase" of its field. They are "commissioned, original contributions, . . . solid and scholarly works, . . . written by authors who are alert to current trends."

MAJOR BARBARA B. HODGES,
M.S.C., U.S.A.

GLANDULAR PHYSIOLOGY AND THERAPY. 5th Edition. Council on Pharmacy and Chemistry of the American Medical Association. 610 pages. J. B. Lippincott Co., Philadel-

phia, Montreal, London, 1954. Price \$10.00

This is the 5th Edition of a book in this field. The 1st Edition was published 30 years ago. In such a rapidly developing specialty, it is only natural that many new books would be published in recent years. This volume is under the auspices of the Council on Pharmacy and Chemistry of the American Medical Association, compiled by thirty-one contributors, a number of whom have been in this field for a considerable period and contributed much to our knowledge of endocrinology.

Dr. Hans Selye has compiled the first chapter on integration of endocrinology. There are 88 pages on the adenohypophysis, including a rather long treatise on the posterior lobe which the average reader may find a bit voluminous. The section on hypopituitarism perhaps could have been made somewhat more detailed to the average reader from the standpoint of differential diagnosis and therapeutic management. In the section on the adrenal medulla, one does not find reference to the use of aortograms in the localization of pheochromocytoma. Dr. Astwood contributes an excellent 92 pages with 371 references on the anatomy and physiology of the thyroid. The section dealing with the effect of hyperthyroidism on other systems is a valuable one. In a discussion of hypothyroidism one fails to find a discussion of the anemias complicating or sometimes seen accompanying this condition. On reading the management of diabetic coma, one has the feeling that a more specific outline of management would be helpful. The use of plasma acetone in the management of diabetic ketosis has found favor in many places. No reference is found as to the use of this procedure as a guide to therapy.

A detailed reduction regimen incorporating the high calories and low-calorie foods, including sauces, dressings, etc., might be helpful in the section on obesity.

The authors have contributed something new in a text of this field by including worth-while chapters on endocrine management of neoplastic diseases, behavior and intelligence and common misconceptions in endocrine therapy. The physicians and endocrinologists would find the chapters on diagnostic aids and modes of administration of hormones of value and practical assistance. Physicians, surgeons, gynecologists and endocrinologists will find valuable reference material throughout most of the book. Residents, interns and medical students will find useful information in the discussions of

anatomy, physiology, abnormalities of function and therapeutic management in this field.

COL. FRANCIS W. PRUITT, M.C., U.S.A.

PHYSICAL THERAPY AFTER AMPUTATION. The Treatment of the Unilateral Lower-Extremity Amputee. By Margaret Bryce. 93 pages, illustrated. The University of Wisconsin Press, Madison, 1954. Price \$1.50

This is an excellent book for the average physical therapist who has little opportunity to work to any great extent with amputees. The author starts with the treatment immediately following surgery, and carries the reader through all aspects, starting with proper bed positioning, bandaging, exercise routines and prosthetic training with the final discharge of the amputee.

A note of warning might have been given under the chapter titled, "Bandaging." This warning is in the use of the "recurrent" type of bandaging. Too often, in using this method, the patient develops a "dog-eared" shaped stump; this is especially true of the below-the-knee amputee. The "spiral" technique of bandaging, although not as neat in appearance, is often the more practical method to use. If the patient does use the recurrent bandaging method, he should be instructed to avoid pulling the vertical turns tightly. He should start applying pull when he begins the spiral turns around the end of the stump.

The chapters dealing with prosthetic training and the diagnosis of limbs are excellent. One point might be made with regard to the abduction exercise mentioned on page 22, number 8. Instead of having the rope in back of the good leg to keep the attached stump in extension, it might prove more effective to allow the rope to be in front of the good leg, thus encouraging active exercise of the extensors along with exercise of the abductors against resistance.

All in all, the physical therapist would do well to have this book in his professional library. It is a valuable guide to those who have had little experience with amputees and it is a definite aid to those who are presently confronted with problem cases.

CAPT. FLORENCE G. PRESLEY,
W.M.S.C., U.S.A.R.

THE DIGITAL CIRCULATION. By Milton Mendlowitz, M.D., F.A.C.P., Associate Attending Physician, Mount Sinai Hospital; Research Fellow, Columbia University Division of Goldwater Memorial Hos-

pital, New York City. 182 pages, illustrated. Published by Grune & Stratton, New York, 1954. Price \$6.75

The first half of this small volume is devoted to brief accounts of the anatomy, physiology, pharmacology, pathology, and methods of study at the digital circulation. The author's work in the field of digital calorimetry as a method of estimating digital blood flow is described in somewhat greater detail.

The latter half of the book deals with pathologic conditions manifesting altered digital circulation. These include peripheral vascular diseases, both functional and organic in type, and such clinical states as clubbing, hypertension, anemia, and polycythemia. A chapter is devoted to digital clubbing, a subject of special interest to the author.

The book is illustrated almost entirely by material originally published elsewhere in journals or in other books. This does not detract from the value of the book, but rather renders the volume usable by collecting under one cover pertinent material from many sources. The text is well-written with notable brevity and economy of expression. Space is fully utilized throughout.

Numerous notations in the text refer the reader to an extensive and well-chosen list of references at the end of the book. This excellent feature provides the reader with ready source material should his interest in a subject carry him beyond the coverage possible in the book. Indexing is adequate and the quality of the printing is excellent.

This book is recommended as a usable addition to the library of clinicians or investigators whose interests lie in the field of the peripheral vascular system.

MAJ. VERNON M. SMITH, M.C., U.S.A.

THE UNMARRIED MOTHER IN OUR SOCIETY: A Frank and Constructive Approach to an Age-Old Problem. By Sara B. Edlin. 189 pages. Farrar, Straus and Young, New York, 1954. Price \$3.00

Sara B. Edlin is a trained social worker, who was invited to take over the administration of an institution for unmarried mothers. In this little book she tells in the first person, her experiences in helping to improve the lot of these unfortunate girls since 1912. In the first ninety-one pages the discussion is rather superficial, but in the last half of the book she makes a definite contribution to the subject.

It is in the latter part of the book that she

answers the question: "Why does any modern girl become an unwed mother?" In her own words she states: "The question is asked, not because people imagine her to be different as a human being from girls of earlier generations, but because sex information is so much more widespread today, and the means of avoiding pregnancy is so easily available.

"It is true that sex relationships outside of marriage are more common today, for various reasons. It is harder to marry. The housing shortage leads to overcrowding and discourages or even prevents early marriage. Post-war and pre-war tensions make young women doubt the practicality of waiting. Girls become panicky lest they be left out, and some enter into a relationship hoping it may result in marriage. Acquiescence becomes expected, and a girl is considered a 'poor sport' if she refuses. Men, on the other hand, have valid reasons for not marrying: economic insecurity, fear of going to war and not returning, or coming back physically crippled or mentally ill."

Any physician interested in the problem of helping young women who have become pregnant outside of marriage will find this book well worth the reading, even though the author could have discussed the etiology more extensively.

CDR. JAMES L. MCCARTNEY,
M.C., U.S.N.R. (RET.)

RECENT DEVELOPMENTS IN PSYCHOSOMATIC MEDICINE. By Eric D. Wittkower, M.D., and R. A. Cleghorn, M.A., D.Sc., Associate Professors of Psychiatry, McGill University, 495 pages. Lippincott Company, Philadelphia-Montreal, 1954. Price \$10.00

This important book satisfies the very real need for an authoritative and comprehensive presentation of modern ideas in the rapidly expanding field of psychosomatic medicine. An attempt has been made to present a summary of basic concepts that have been derived by workers with varying points of view. To write the book's 25 chapters, the editors have called upon such well-known figures as Lawrence Kubie, Stewart G. Wolf, Sydney Margolin, and Leon Saul. The first section is devoted to a general presentation of basic concepts and theories while the latter two thirds cover specific illnesses and psychosomatic problems in various specialties.

A review of the list of contributors points up the sad fact that psychosomatic medicine remains largely a sub-specialty of psychiatry rather than a meeting ground for psychi-

atrists and other physicians. Of the 29 contributors, 26 are either psychiatrists or psychologists. Most of the writers are psychoanalytically oriented and their free use of technical jargon is not likely to win many converts from other fields, despite the editors' statement that the book is intended for all those who are genuinely interested in patients.

Physicians in general, however, will find, especially in the section on specific illnesses, much that will increase their understanding of their patients as human beings. The excellent articles on the thyroid, diabetes mellitus, and cardiovascular disorders can be read with profit without previous detailed knowledge of psychodynamics. For the practicing psychiatrists, this is an important text to own since it makes available excellent coverage of the important thinking in this field within a single volume.

CAPT. WILLIAM C. SUPER, M.C., U.S.A.

ISOTOPIC TRACERS. By G. E. Francis, Reader in Biochemistry, St. Bartholomew's Hospital Medical College; W. Mulligan, Senior Lecturer in Biochemistry, Glasgow University Veterinary School; and A. Wormald, Professor of Biochemistry, St. Bartholomew's Hospital Medical College. University of London, Publishers (in U.S.—John de Graff, Inc., New York 10, N.Y.), 1954. Price \$7.00

This text gives a fine resume of activities in England on the subject of isotopic tracers. Included in the discussion is a section which gives the necessary physics and techniques of application of isotopes. Following this the text concerns itself with the uses of isotopes in investigation of the applicable physical and biological systems.

The book is written at the advanced technician level. As such, it is to be considered informative. It does not replace standard texts on the same subject which have been previously published in this country.

LT. COL. GERALD M. McDONNEL, M.C., U.S.A.

MEREDITH'S HYGIENE, 5th Ed. By Arthur F. Davis, B.S., Ed.M., Dr.P.H., Professor of Physical Education, Pennsylvania State University; and Warren H. Southworth, B.S., M.A., Dr. P. H., Professor of Health Education, University of Wisconsin. 906 pages, illustrated. The Blakiston Co. Inc., New York, 1954. Price \$6.00

This excellent volume for college students

on "physical, mental, and social health from personal and public aspects" has been brought up to date as well as having a more extensive bibliography of recent references and lists of films which are suitable for college audiences.

The text is clearly written with paragraphs and subheadings arranged for graphic visualization. There are many illustrations and charts of high caliber.

The subjects range from the health situation in the United States, to the body in health and disease; the forces for health; the problem of infection; first aid in injury and disease; the hygiene of everyday life; and familial hygiene and mental health.

The physician who teaches undergraduate college students will find this book an aid to his course, for the students will enjoy reading it.

PHILIP H. SMITH, M.D.

PROCEEDINGS OF THE INTERNATIONAL SOCIETY OF HEMATOLOGY, Fourth International Congress. Editors-in-Chief, William Dameshek, M.D., Sol Haberman, Ph.D., Felipe Jimenez de Asua, M.D. 600 p., 244 illus. Grune and Stratton, New York, 1954. Price \$10

This new volume of 600 pages contains 35 full length articles and 67 communications or abstracts which covers most of the formal presentations at the Fourth Congress of the International Society of Hematology, Mar del Plata, Argentina, September 1952. These articles represent much original material from many of the world's leading hematologic laboratories. The original articles are written in either English or Spanish with appropriate translations of the summaries. The communications are presented in both English and Spanish. The volume is divided into eight sections paralleling the actual organization of the Congress. Problems presented and discussed are: Neuroendocrinologic regulation of hematopoiesis and hemostasis; histochemistry and cellular ultrastructure; etiology and treatment of the leukemias; manifestations of radioactivity on hematopoietic organs and hemostasis; polycythemia; immunohematology; hemorrhagic disturbances; and a final section on miscellaneous subjects related to hematology. These subjects cover the broad spectrum of modern hematology. The usefulness of the volume is not limited to the hematologist alone but has much information of value to the internist. The editors are to be congratulated for their pains-

taking work in bringing this material together. This volume is recommended to everyone who has any sort of hematologic interest.

LT. COL. JOSEPH H. AKEROYD,
M.S.C., U.S.A.

MEDICAL USES OF CORTISONE. Edited by Francis D. W. Lukens, M.D., Professor of Medicine, University of Pennsylvania School of Medicine; 29 contributors. The Blakiston Co., New York & Toronto, 1954. Price \$7.50

In this 534-page volume is found an authoritative compendium, a compilation, covering present day concepts of the use of adrenal hormone therapy. The list of contributing authors includes Drs. Philip Hench, George N. Thorn, Chester S. Keefer, Frank H. Bethell and other well known physicians. These reports provide an excellent guide to the constructive employment of cortisone and related hormones in medicine. Dr. Lukens points out that, "The most effective and safe use of these agents will demand of physicians a skill similar to that which they now apply to the use of such mainstays of medical practice as digitalis, thyroxin, and insulin." This small volume should be on the bookshelf of every physician.

COL. ROBERT E. BLOUNT, M.C., U.S.A.

LABORATORY TECHNIQUES IN RABIES. World Health Organization Publication. Columbia University Press, New York. Price \$3.00

This book, compiled by contributors with world wide experience in this subject, is an excellent manual for individuals interested in the diagnosis of rabies in the laboratory, in methods of vaccine production and testing, and in the production of hyperimmune serum.

In a single volume the laboratory worker has concise information which will serve as a ready reference for him. Those concerned with teaching this subject will also find this manual helpful.

LT. COL. L. C. MURPHY, V.C., U.S.A.

WHY WE BECAME DOCTORS. Edited by Noah D. Fabricant. 182 pages. Grune and Stratton, New York, 1954. Price \$3.75.

The question of why people, especially those who attain some eminence, go into one profession rather than another is always of interest. It is especially interesting to young people trying to make a choice of their life's

work and to their elders who are called upon to advise them.

This little book has a special appeal to those planning to become doctors and to those who are already members of the medical procession. It consists of a collection of autobiographical fragments culled from the writings of a large number of doctors—some still alive—describing why they chose to study medicine. Specifically, 50 extracts are included. Among them are accounts by Havellock Ellis, Somerset Maugham, Sigmund Freud, Marion Sims, Albert Schweitzer, Ronald Ross, Stanley Cobb, Alice Hamilton, George Crile, and Hugh Young, to mention but a few.

Practical as this book is, it should be mentioned that it also makes a pleasant addition to one's bedside bookshelf.

MORRIS C. LEIKIND

HUMAN RELATIONS IN ACTION. By H. Edmund Bullis, A.B., M.E., and Cordelia W. Kelly, R.N., B.S. G. P. Putnam's Sons, New York, 1954. Price \$1.50.

Colonel Bullis and Mrs. Kelly have offered a practical guide for everyday living. Illustrative of the topics discussed are: "The Importance of How We Feel," "Growing Up Emotionally," "Dynamic Forces Within Us," "Would You Make a Good Leader?" "Making and Keeping Friends," "Design for Effective Living."

To focus on their topic, the authors have been extremely selective in the principles and facts presented; to make the book popular, they have used very simple and direct language. In the opinion of the reviewer, this selection and language reduce the value of the presentation for professional people in the medical field, most of whom receive in their training today the basic elements of psychology and human behavior.

The sincerity of the authors in presenting a common sense approach to a subject of vital concern to everyone—human relations—is evident. At the end of each chapter they offer questions and examples. These are sufficiently provocative and oriented to everyday life to produce the desired result, "something to think and talk about." But the result lacks direction and brings up a number of principles that are not sufficiently clarified in the text to leave with the "thinker" or "talker" a solution.

In summary, there is no question but what the authors covered the most important situations involving human relations, and have done so in a most readable fashion. Whether

or not the reader is left with any better ability to solve these situations for himself seems to be a real question.

MAJOR BARBARA B. HODGES, MSC, USA

THE PHARMACOLOGIC PRINCIPLES OF MEDICAL PRACTICE. Third Edition. By John C. Krantz, Jr., Professor of Pharmacology, School of Medicine, University of Maryland; Member of the General Committee of Revision of the United States Pharmacopeia; and C. Jelleff Carr, Professor of Pharmacology, School of Medicine, University of Maryland. 1183 pages. The Williams & Wilkins Company, Baltimore. 1954. Price \$12.00.

Since the appearance of the previous edition in the course of continual revision by the authors, this book has been brought up to date by the addition of some 70 pages in all. However, the progress during the last three years has required extensive revision at many places throughout the text, new tables and illustrations have been added. To conserve space drugs of only historical value have been deleted. This is noticed, for example, in the sections dealing with venereal disease.

The general style is unchanged: history, anti-infectives, skin, central nervous system, autonomic nervous system, circulation, reproduction and metabolism. The organic chemistry of the important drugs has been stressed; pharmacodynamics, dosage and official preparations listed. Each chapter is supported by a brief bibliography.

The tables permit rapid interpretation of the text. The illustrations include a substantial number of photographs of the pharmacologists and clinicians whose findings are summarized in the text. The importance of enzymes is emphasized throughout, and used as the basis of explanation of drug action. This book is expanding into a ready reference for practitioners, as well as a text for students. The authors have woven their extensive experience into the interpretation of reports from the literature. The book is well bound and carries an index of 33 pages. It would appear to the reviewer that the next edition should carry a supplemental therapeutic index.

JAMES C. MUNCH

LEGAL MEDICINE, PATHOLOGY AND TOXICOLOGY. Second Edition. By Thomas Gonzales, M.D., Morgan Vance, M.D., Milton Helpert, M.D., and Charles J. Umberger, Ph.D. 1313 pages. Appleton-Century-Crofts, Inc., New York, 1954. Price \$22.

LEGAL MEDICINE, by 29 Collaborators, edited by R. B. H. Gradwohl, M.D. 1051 pages. C. V. Mosby Co., St. Louis, 1954. Price \$20.

The almost simultaneous publication of the two volumes named above, and hereafter designated, for brevity, *Gonzales* and *Gradwohl*, offers an excellent opportunity to discuss, compare, and contrast them in a joint evaluation, a course which this reviewer plans to follow.

The 1953-54 harvest in the way of legal-medical publications has been a bountiful one. For in addition to the two ponderous tomes now under discussion, it includes Keith Simpson's *Modern Trends in Forensic Medicine* (London, 1953), Douglas Kerr's *Forensic Medicine*, and Thomas Dewar's *Textbook of Forensic Pharmacy*. The last two are again British publications, both having appeared in London during 1954. I have no knowledge as to whether they represent a complete list for those years with respect to works in the English language, not to mention other tongues. But at an rate the thousands of printed pages presently gushing forth on forensic medical topics certainly suggests a markedly increased current interest in such matters.

It is interesting to compare the table of contents of *Gonzales*, and of *Gradwohl*, not only one with another but with that of a volume a century older, the fifth English (fourth American) edition of Alfred Taylor's *Medical Jurisprudence* (London and New York, 1854/1856). Examination of that work, which runs to 687 pages and index, reveals at once the fact that its coverage, while obviously less scientifically exact in detail than that found in current publications, is much more extensive, and its observations infinitely more accurate, than today's reader might imagine. Of its seventy chapters the first 19 deal with poisons, the next 18 with wounds, fractures, burns and scalds. There follow 9 on infanticide, and some ten more on pregnancy, delivery, abortion, paternity, sex abnormalities, sterility, and rape. Drowning, hanging, strangulation, and suffocation consume 7 more. One short chapter concerns death from lightning, cold, and starvation, while the concluding six deal with insanity and its implications.

Turning to the 47 chapter titles listed in the *Gonzales* table of contents, we find that the first seven (156 pp.) discuss matters not listed by Taylor, subjects which since his day have come to be recognized as vitally important in any medico-legal inquiry. They include:

1. The Medical Examiner and the Coroner
2. Investigation at the Scene of Death
3. Identification
4. The Signs of Death
5. The Medicolegal Autopsy; Determination of the Cause of Death
6. Unexpected and Sudden Natural Death
7. Natural Death and Trauma

Again, chapters 26, 27, and 28, totaling 68 pages and discussing:

26. Examination of Blood
27. The Human Blood Groups
28. Microscopy of Hair and Other Material,

present matter not found in Taylor's work. But apart from these ten chapters just listed (which constitute but 17% of the entire volume), Gonzales offers no new topics, although I repeat, its treatment of those presented by Taylor bears ample witness to the almost incredible progress in all fields of science recorded during the hundred years since that gentleman prepared his treatise.

Turning to Gradwohl we find among his 29 distinguished collaborators four Britons, one of them the redoubtable Sir Sidney Smith, and 25 Americans. (There are 18 M.D.'s, the remainder bearing degrees according to their specialties.) Many of its 39 chapters differ markedly both as to topic and treatment from those of Gonzales. In short, whereas Gonzales follows tradition so closely that it might indeed be a 1954 edition of Taylor, Gradwohl undertakes to explore new paths. Its chapters for which Gonzales offers no counterpart include one (19 pages) on the history of legal medicine (by Sidney Smith) and two upon blood with relation to paternity (totaling 69 pages). This subject receives scant treatment in Gonzales. *Skeletal Evidence* fills 44 pages, *Forensic Psychiatry*, 70. Entirely revolutionary (and, I imagine, wholly shocking to our British brethren who want no part of any such unorthodox procedures) are chapters on *Narcoanalysis for Criminal Investigation* by Matthews of Minnesota, and *Lie Detection* by Lyle, past president of the Academy for Scientific Interrogation.

As to coverage offered in the two works, I would consider both commendable, neither perfect. Each could borrow advantageously from the other. Thus a chapter on *Investigation at the Scene of Death* should, I believe, be a *must* in any work on forensic medicine. Gonzales devotes 9 pages to this topic; Gradwohl passes it by. One might wish that he had added to his list of contributors LeMoyné Snyder, whose discussion of the

subject in his *Homicide Investigation* (now in its fifth or sixth edition) is masterful and exhaustive.

Further comparison of the two works suggests that Gonzales could well borrow from Gradwohl material upon the history of legal medicine, and on skeletal evidence. As to narcoanalysis and lie detection, opinions may differ. Perhaps these topics belong more in the area of police science than that of legal medicine. But as I have long held, there exists no sharp line of demarcation between the two. In Europe many, if not most, of the outstanding experts in police science are doctors of medicine. In America the legal-medical expert has heretofore restricted himself pretty much to proficiency in the fields of pathology, pharmacy, toxicology, and serology. And the mere fact that Gradwohl includes chapters on narcoanalysis, and lie detection, shows that the old concept of what is and what is not, legal medicine is breaking down. To become outstanding the future practitioner of forensic medicine will have to be a combination of Hans Gross, Sir Bernard Spilsbury, and Dick Tracy.

With more than 200 pages devoted to poisons and 350 to toxicology (together representing about 43% of the entire volume), Gonzales may be said to be rather heavily weighted upon these two subjects. (Comparable figures for Gradwohl are 55 pages and 200 pages, or 24%.)

In both publications, references appear at ends of chapters. However, in Gonzales, these are generally unnumbered, and even when numbered, lack a counterpart in the text. Per contra, most of Gradwohl's *are* numbered both in text and at chapter endings, a much more satisfactory (and scholarly) procedure.

Gonzales closes with an elaborate 14-page appendix listing hundreds of pharmaceutical agents (mostly synthetic organic compounds) and their reactions to 21 different reagents. This should prove of extreme value to him whose specialty is forensic pharmacology.

Both works are pleasingly printed. Gradwohl's type is somewhat larger, and hence presumably a bit easier on the eyes. Each appears adequately indexed.

To summarize. We have here two ample and authoritative volumes on legal medicine. One of these (Gonzales) is by four men whose background of information derives from long experience in a great city—New York. They have produced a work along traditional lines but rather heavily weighted with material on poisons and toxicology. (Perhaps the title adequately reveals this.) The other, by 29 collaborators and a chief editor (Gradwohl) includes contributions

from residents of nine states, the District of Columbia, England (3) and Scotland (1). It discusses, in addition to the conventional topics, others heretofore associated in most minds with police science rather than legal medicine. The fact that its contributors possess such diverse backgrounds as contrasted with the geographically restricted (though unquestionably broad) experience of the four authors of Gonzales, endows it with a cosmopolitan, as against a metropolitan, character, a point which I consider in its favor.

Obviously, the student cannot go wrong on either of these offerings. To the conservative, I recommend Gonzales. To him who would depart the beaten path, Gradwohl probably offers the greater appeal.

COL. CALVIN GODDARD, USAR, RET.

RETROPUBIC PROSTATECTOMY FOR BENIGN ENLARGEMENT OF THE PROSTATE GLAND. By Frances A. Beneventi, M.D., F.A.C.S. 227 pages. 44 original drawings generously illustrated with photographs of pathological specimens, x-rays, subjects. Charles C. Thomas, Springfield, Ill. 1954. Price \$11.

This monograph in 10 chapters covers in a most detailed manner the anatomy of the pelvis, prostate, and bladder. The vascular anatomy is exceptionally well described. The incidence, etiology, pathology and clinical classification of prostatic enlargement is particularly well described. Preoperative and postoperative management are excellently covered. Chapter V on operative technique is divided into two parts, Part I describes most precisely the author's operative technique of retropubic prostatectomy. The description is most clearly illustrated with original drawings by William P. Didusch. Part II describes the procedure step by step and the variations in technique as performed by others.

The postoperative complications are thoroughly discussed including osteitis pubis. An entire chapter is devoted to this subject. The author shows that osteitis pubis is no more the private property of any one operation or condition than it is of any other. The procedure is thoroughly and unbiasedly evaluated in the ninth chapter. The final chapter is devoted to a chronological history of prostatectomy above the pubis.

At the conclusion of each chapter a concise summary is included and prolific references to the literature are included. This monograph is truly a masterpiece for not only does it beautifully describe a valuable procedure, but also thoroughly covers the etiology, anat-

omy, pathology, and diagnosis of benign prostatic obstruction. It should be a part of the library of every surgeon performing prostatic procedures.

LT. COL. K. E. VAN BUSKIRK, MC, USA

THE STUDY OF THE BRAIN. A COMPANION TEXT TO THE STEREOSCOPIC ATLAS OF NEUROANATOMY. By Hyman S. Rubinstein, M.D., Ph.D., D.A.B.P.N., F.A.P.A. Head of the Division of Neurology and Psychiatry, Department of Medicine, Sinai Hospital, Baltimore. 209 pages. Illustrated. Grune & Stratton, New York. 1953. Price \$9.50.

This book is a companion piece to a stereoscopic atlas of neuroanatomy published in 1947 by Rubinstein and Davis, and would be most effectively used with that atlas at hand. However, there are 43 plates in this text which should be an adequate guide to the gross dissection of the human brain, and the numerous simplified line drawings should aid the student in orientation as he dissects the fixed tissues according to the detailed directions given in Chapter 1. The book does not cover the dissection and gross anatomy of the cord or autonomic nervous system.

While the text is not strictly in outline format, yet it is so arranged that the student will be able to proceed, with its use, in an orderly manner through his dissection, and not get lost in a maze of words and fiber tracts. There is a constant stress laid upon the functional importance of the structures at hand, and enough of the clinical implications are there to make the text provocative to the beginning student of neurology and to the clinician alike. Current investigative controversies are avoided, and for the most part time-and-experience-honored interpretations of functions are presented. The section on the bulbar reflex pathways and the cranial nerves, always a stumbling block to the student, are particularly well presented, as are those sections on the cerebellum, its structure and function. The book has indeed made easier an understanding of the structure and function of the brain without suffering the losses so frequently seen in attempts to "simplify" the nervous system. No stress is placed upon the histology of the brain. There is a good list of references, and an adequate index.

COL. JOHN MARTIN, MC, USA

OF PUBLISHING SCIENTIFIC PAPERS. By George E. Burch, M.D., F.A.C.P. Grune & Stratton. New York. 1954. Price \$2.75.

This illustrated essay was presented to the Central Society for Clinical Research by the author as the Presidential Address. Herein the "Investigator-Author" is given an excellent positive approach to the writing of scientific papers. He is also warned of the many pitfalls in the field of scientific writings. The responsibilities of readers and editorial boards is clearly set forth. We also learn about the responsibilities of publishers and the lay press in publishing and reporting "scientific activities in medicine, both clinical and experimental." Every medical writer will profit much by reading this fine, authoritative essay and keeping a copy handy for reference.

COL. H. P. MARVIN, USA, RET.

ATOMIC WEAPONS IN LAND COMBAT. 2nd Edition. By Col. G. C. Reinhardt and Lt. Col. W. R. Kintner. The Military Service Publishing Co., Harrisburg. Price \$3.95.

With the arsenals of the world stockpiled with deliverable fission and fusion weapons, the strategic and tactical employment of these weapons becomes a matter of universal concern. In this second edition of their book, which has been revised to include the latest information on new developments, Cols. Reinhardt and Kintner approach the problem from a straightforward military point of view. Here are new weapons of untold power, and the techniques and tactics of their use must be mastered if we are to survive. The authors discuss initially the characteristics, advantages, disadvantages and possible uses of atomic weapons. They then examine in some detail the tactical application of these new weapons in both offensive and defensive situations, as well as in special operations. In addition to showing how the soldier can fight with or against atomic weapons, the authors present some provocative discussions on training problems, logistics, command, tactical doctrine and troop organization, in atomic warfare. Of particular interest is their discussion of delivery means of atomic weapons on the battlefield.

While not solving the myriad problems created by the advent of atomic warfare, the authors have focused attention on some of

the more critical areas, opening the door for serious thought and discussion on the part of every member of the Armed Services, who must live and fight with these revolutionary weapons.

LT. COL. L. B. WILSON, USA

THE SCOURGE OF THE SWASTIKA. By Lord Russell of Liverpool, C.B.E., M.C. 259 pages, illustrated. Philosophical Library, New York. 1954. Price \$4.50.

Among the many, more or less sensational books and pamphlets which after the liberation of Germany were written about the war crimes of the Führer and the Nazi Party the work of Lord Russell stands out as the most readable and the most informative.

The book is authentic since its author has collected his facts from official sources which were available to him as Deputy Judge Advocate General and legal adviser to the Commander-in-Chief, British Army of the Rhine, in respect to all trials of German war criminals in the British Zone of Occupation. The material of the work is not limited to the ill-treatment of the Jews—the Jewish question was but one of the many racial and philosophical problems of the Third Reich—but, in seven chapters, it includes all types of atrocities which had been committed by Hitler's instruments of tyranny against prisoners of war and the population at large, in the countries they entered or occupied, atrocities on high seas and on land, in camps of slave laborers and in the concentration camps.

Though the mass of information is undoubtedly accurate and the book provides the ordinary reader with a truthful account of the war crimes of the SD, SS, Gestapo and other Nazi organizations, it is felt that, in order to safeguard the objectivity of history and to protect the best interests of society, an account of such deeds against humanity requires full documentation and references to the original sources and depositories of evidence. By omitting the paraphernalia of pragmatic history, Lord Russell gave us a well-written journalistic exposé only. For its publishing he was compelled to resign from his position in the British Army.

CLAUDIUS F. MAYER, M.D.



BOOKS RECEIVED

Books received are acknowledged in this department, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for review in the interest of our readers and as space permits.

Stellate Ganglion Block, by Daniel C. Moore, M.D. Charles C Thomas, Publisher, Springfield, Ill. Price \$10.50.

Rehabilitation Monograph VII. Geriatric Rehabilitation Service Institute of Physical Medicine and Rehabilitation. New York University—Bellevue Medical Center, 400 East 34th St., New York. Price \$1.00.

The Sandoz Atlas of Hematology. Sandoz Blood Atlas, 68 Charlton St., New York 14, N.Y. Price \$7.00.

Surgery of the Elbow, by Frederick M. Smith, M.D. Charles C Thomas, Publisher, Springfield, Ill.

Laboratory Techniques in Rabies, Monograph Series No. 23. Columbia Univ.

Press, 2960 Broadway, New York 27, N.Y. Price \$4.00.

Biology of Anopheles Gambiae. Research in French West Africa. By M. H. Holstein. Columbia Univ. Press, 2960 Broadway, New York, N.Y.

Expert Committee on Venereal Infections and Treponematoses. Third Report. Technical Report Series No. 79. Columbia Univ. Press, 2960 Broadway, New York 27, N.Y.

Diagnostic Advances in Gastrointestinal Roentgenology, by Arthur J. Bendick, M.D. Grune & Stratton, Inc., New York, N.Y. Price \$6.00.

Learning, Reinforcement Theory, by Fred S. Keller. Doubleday & Co., New York 22, N.Y.

Clinical Orthopedics #4, Single numbers \$7.50—sustaining \$5.00. J. B. Lippincott Co., Philadelphia, Pa.

The Skin, by Arthur C. Allen, M.D., The C. V. Mosby Co., St. Louis, Mo., Price \$25.00.



The Sir Henry Wellcome Medal and Prize

COMPETITION FOR 1955

THE competition is open to all medical department officers, former such officers, of the Army, Navy, Air Force, Public Health Service, Veterans Administration, The National Guard and the Reserves of the United States, commissioned officers of foreign military services, and all members of the Association, except that no person shall be eligible for a second award of this medal and prize and no paper previously published will be accepted.

The award for 1955, a medal, a scroll, and a cash prize of \$500, will be given for the paper selected by a committee composed of the Association's vice-presidents which reports on the most useful original investigation in the field of military medicine. The widest latitude is given this competition, so that it may be open to all components of the membership of the Association. Appropriate subjects may be found in the theory and practice of medicine, dentistry, veterinary medicine, nursing and sanitation. The material presented may be the result of laboratory work or of field experience. Certain weight will be given to the amount and quality of the original work involved, but relative value to military medicine as a whole will be the determining factor.

Each competitor must furnish six copies of his paper which must not be signed with the true name of the author, but are to be identified by a *nom de plume* or distinctive device. These must be forwarded to the Secretary of the Association of Military Surgeons of the United States, Suite 718, 1726 Eye St. N.W., Washington 6, D.C., so as to arrive at a date not later than 1 August 1955, and must be accompanied by a sealed envelope marked on the outside with the fictitious name or device assumed by the writer and enclosing his true name, title and address. The length of the essays is fixed between a maximum of 10,000 words and a minimum of 3000 words. After the winning paper has been selected the envelope accompanying the winning essay or report will be opened by the Secretary of the Association and the name of the successful contestant announced by him. The winning essay or report becomes the property of the Association, and will be published in *MILITARY MEDICINE*. Should the Board of Award see fit to designate any paper for "first honorable mention" the Executive Council may award the writer life membership in The Association of Military Surgeons, and his essay will then also become the property of the Association.

NOW IN FORCE — NOW AVAILABLE
to Eligible Members
OUR OUTSTANDING
GROUP DISABILITY INSURANCE PROGRAM

providing
SICKNESS, ACCIDENT and HOSPITAL BENEFITS
SICKNESS BENEFITS up to \$100.00 per week payable for 5 years
(No house confinement required at any time)
ACCIDENT BENEFITS up to \$100.00 per week payable for life
HOSPITAL BENEFITS of \$10.00 per day

Secure complete information from
ASSOCIATION SERVICE OFFICE
THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES
Suite 914, 1500 Walnut Street, Philadelphia 2, Pa.

....., 19.....

To The Association of Military Surgeons of the United States
Suite 718, New Medical Bldg., 1726 Eye Street, N. W.
Washington 6, D.C.

I hereby apply for MEMBERSHIP in THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES, and enclose the sum of six dollars for my annual dues, including MILITARY MEDICINE. (Make checks payable to THE ASSOCIATION OF MILITARY SURGEONS, U.S.)

Name
(State both Christian and Surname in Full)

Title and Service

Address in full

Membership proposed by

.....

